TARGETED BROWNFIELDS ASSESSMENT PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

BELLFORT LANDFILL HOUSTON, TEXAS

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ACRONYMS AND ABBREVIATIONS

°C degrees Celsius

°F degrees Fahrenheit

bgs below ground surface

COC chain-of-custody

DOT department of transportation

EM engineer manual

EPA United States Environmental Protection Agency

ESA Environmental Site Assessment
ESI Environmental Site Investigation

HSA hollow stem auger

ICP Inductively Coupled Plasma
IDW investigative derived waste

kg kilogram

LEL lower explosive limit

mg milligram MS matrix spike

MSD matrix spike duplicate

PCL Protective Concentration Level
PPE personal protective equipment

PPM parts per million
PVC polyvinyl chloride
QA quality assurance
QC quality control

RCRA Resource Conservation and Recovery Act

SEE Stell Environmental Enterprises, Inc.

SOW Scope of work

SVOCs semivolatile organic compounds

TAL total analyte list

TCL target compound list

TBA Targeted Brownfields Assessment

TCLP Toxicity Characteristic Leaching Procedure

Terracon Terracon Consultants, Inc.

TPH Total Petroleum Hydrocarbon

TRRP Texas Risk Reduction Program

U.S. United States

USACE United States Army Corps of Engineers

VOCs volatile organic compounds

Work Plan Phase II Environmental Site Assessment Work Plan and Quality

Assurance Project Plan

1.0 INTRODUCTION

This Phase II Environmental Site Assessment (ESA) Report describes the results of the field investigation that was conducted during June through July of 2010 at the former Bellfort Landfill (Site), located in Houston, Texas (Figure 1). The City of Houston would like to redevelop the site for possible park space, a botanic garden, and a solar plant facility. Stell Environmental Enterprises, Inc., (SEE) of Elverson, Pennsylvania, performed this field investigation under United States (U.S.) Army Corps of Engineers (USACE), Fort Worth District Contract No. W9126G-06-D-0037, Delivery Order No. 0024. The Phase II ESA was performed in accordance with the detailed Statement of Work (SOW) issued by the USACE dated November 25, 2009 and the Phase II Environmental Site Assessment Work Plan and Quality Assurance Project Plan (Work Plan) developed by SEE (SEE 2010).

This ESA was funded by the U.S. Environmental Protection Agency (EPA) Region 6 Targeted Brownfields Assessment (TBA) program. EPA tasked USACE Fort Worth District with providing the ESA in response to a TBA assistance request from the City of Houston.

1.1 SITE LOCATION AND DESCRIPTION

The former landfill is 299.5 acres in size and is located approximately 7 miles south of Houston, Texas, in Harris County. The Site is bounded to the north by Bellfort Avenue, to the east by Comal Street, to the south by Reed Road, and to the west by Texas Route 288 (Figure 1).

Currently, the Site contains a mixture of overgrown grass areas and wooded areas consisting primarily of scrub brush. A few former roads, which were used in past investigations of the Site, traverse the property. A former incinerator was located in the northwestern section of the Site. Johnson Public Library is located in the southeastern corner of the site. Adjacent to the northeastern corner of the site is Sunnyside Public Park, which has ball fields, tennis courts, and an in ground public swimming pool. A channelized unnamed tributary to the San Jacinto River flows north to south along the western boundary of the Site.

Surface water is the primary water supply source for Harris County and the City of Houston. Surface water accounts for 71% of the city of Houston's water supply. Groundwater accounts for the remaining 29% of its water supply. The City of Houston supplies potable water to the surrounding developed properties.

The soils in the Bellfort Landfill project area consist of clays to silty clays. The soils are very deep and poorly drained. The Beaumont Formation, which consists of a very deep, poorly drained soil located in the low uplands, underlies the site. This formation consists of clay sediments that were deposited during the Pleistocene Age.

Harris County has a moist, subhumid climate, with hot summers and mild winters. Temperatures range from an average low of 42 degrees Fahrenheit (°F) in January to an average high of 92°F in July and August. Rainfall averages a little more than 51 inches per year, with the highest rainfall occurring in May through July.

1.2 SITE HISTORY

The City of Houston purchased the property in 1937 and used the Site mostly as a landfill with an incinerator located in its northwestern corner. The landfill closed in 1970 and the incinerator closed in 1971. From 1970 through 1977, soil and demolition debris were disposed of at the site. During the mid 1970s, the City of Houston added approximately 2 million cubic yards of soil to the landfill cover. The site currently is not being used.

1.3 PAST INVESTIGATIONS

In the late 1970s, EMCON was hired to study the feasibility of building an 18-hole golf course on the property. The study included drilling and sampling 16 soil borings, measuring landfill gas, and installing three groundwater monitoring wells. The study concluded that constructing a golf course was technically feasible; however, cost considerations postponed its development.

Terracon Consultants, Inc., (Terracon) conducted a limited Environmental Site Investigation (ESI) of the Site during the fall of 2004. The purposes of the ESI were to preliminarily evaluate the presence of landfill gas, determine if groundwater has been impacted, and explore geotechnical subsurface conditions beneath the landfill. The investigation included the installation of six landfill gas monitoring wells, five groundwater monitoring wells, and two geotechnical borings. The investigation discovered that the waste was still generating methane gas. No volatile organic compounds (VOCs) were detected at concentrations above the Texas Risk Reduction Program (TRRP) critical protection levels in the groundwater samples collected from the groundwater monitoring wells. Arsenic and selenium were detected at concentrations greater than the TRRP assessment levels in groundwater samples collected from two of the monitoring wells. Terracon concluded that additional monitoring at the gas monitoring wells was not necessary; however, they recommended that the gas monitoring wells remain in place for possible future monitoring (Terracon, 2004).

Terracon conducted a supplemental limited site investigation in September 2005. The objective of this work was to investigate the subsurface conditions within the landfill for the presence of municipal solid waste, ash associated with the former incinerator, and landfill gas. The investigation included the completion of 11 soil borings, of which three were converted into landfill gas monitoring wells, and the plugging and abandoning of five existing groundwater monitoring wells. The investigation discovered the site did not have sufficient "uniform" soil cover for redevelopment. There appeared to be very little incinerator ash present in the study area. There were concentrations of Resource Conservation and Recovery Act (RCRA) metals detected in the near surface soil; however, the metals concentrations were below respective TRRP critical protection levels (Terracon, 2005).

1.4 SCOPE OF INVESTIGATION

The Phase II ESA was conducted to further determine the thickness of the waste, determine the nature of landfill cap material, characterize incinerator ash, and evaluate potential groundwater impacts. The scope of the field activities that were conducted included drilling 26 subsurface borings, collection of 10 surface and shallow subsurface soil samples, installation of four temporary monitoring wells, groundwater sampling, and laboratory analysis of the 10 soil and four groundwater samples collected.

2.0 FIELD OPERATIONS

The Phase II ESA investigation was conducted over the course of two field events in June 2010 and July 2010. During the first field event the following activities took place:

- Four temporary monitoring wells were installed;
- Seven soil borings were drilled to determine the thickness of the cap and municipal waste;
- Nineteen soil borings were drilled to determine the thickness of the cap; and
- Ten surface soil samples were collected to investigate the potential disposal of ash from the former incinerator located on site.

The second field event included sampling of the four monitoring wells to determine site wide groundwater conditions. The following sections present a detailed description of the field operations.

2.1 DETERMINATION OF WASTE AND CAP THICKNESS

A certified drilling contractor licensed in the state of Texas drilled seven borings to determine the waste and cap thickness in areas lacking data from previous investigations. The locations of the borings were based on guidance from the EPA. The borings were located in the field based on field conditions and physical access (Figure 2).

The boreholes were advanced through unconsolidated material using hollow stem auger (HSA) methods and 6½-inch inside diameter augers. In conjunction with HSA drilling, continuous split barrel sampling and standard penetration tests were conducted. Since the area was overgrown, a Geoprobe® mounted on a tractor was used in areas where the drill rig could not get to. A split-spoon or MacroCore sampler was employed to obtain the soil to be sampled for the Geoprobe® borings using direct push technology. The borings extended to a depth of 5 feet below the base of the waste material. Waste borings that did not encounter any waste were terminated after ten feet according to the Work Plan. Continuous samples were collected from these borings to provide data regarding the description of the cap, waste, and soil below the waste. A geologist logged the borings on Engineering Form 1836 and 1836-A following the methods outlined in Engineer Manual (EM) 1110-1-4000 (USACE, 1998). None of the samples collected were submitted for laboratory analysis.

Nineteen soil borings were drilled to determine the landfill cap thickness and material using HSA and Geoprobe[®] direct push technology methods as described above. These borings were completed to a depth of 10 feet. Continuous samples were collected to provide data regarding the description of the cap and waste. Boring logs were completed as described above. The ambient levels of methane were monitored during all drilling activities. The monitoring results were recorded.

Soil cuttings from the waste and cap thickness investigation were collected, containerized, and managed as investigation-derived waste (IDW) as discussed in Section 2.8.

2.2 CHARACTERIZATION OF INCINERATOR ASH

Ten surface soil samples were collected to investigate the potential disposal of ash from the former incinerator that was located on site (Figure 2). A disposable trowel was used to collect the surface soil samples. Soil retrieved with the trowel was placed in a stainless steel bowl and homogenized. Individual sample containers were filled with the homogenized soil.

Collected samples were placed in laboratory-provided sample containers, sealed, labeled, and placed in a cooler chilled to 4 degrees Celsius for subsequent submittal to the laboratory for analysis.

Chain-of-custody (COC) forms supplied by the analytical laboratory were used to track all samples collected at the site. The COC forms were completed at the same time the environmental samples were collected and identified the sampling personnel, sample time, location, and analyses required. The COC forms accompanied the samples at all times, from the time of sample collection to the time the samples were received by the analytical laboratory.

The laboratory analytical procedures used are discussed in Section 2.9.

2.3 MONITORING WELL INSTALLATION

Four temporary monitoring wells were installed outside of the waste boundary along the four sides of the property to investigate the presence/absence of shallow groundwater contamination on a site-wide basis. Monitoring well MW-2R is located adjacent to former location of MW-2, and MW-4R is located adjacent to former location of MW-4 to duplicate the wells where previous Target Analyte List (TAL) metals were detected. The other two wells, MW-6 and MW-7, are located along the western and northern boundaries of the property, respectively, as requested by EPA personnel. The location of the monitoring wells is presented on Figure 2.

Monitoring well design, installation, and documentation generally followed the methods outlined in EM 1110-1-4000 (USACE, 1998). The four monitoring well boreholes were drilled using HSA methods as described above. Boreholes were advanced through unconsolidated material using 6½-inch inside diameter augers. In conjunction with HSA drilling, continuous split barrel sampling and standard penetration tests was conducted. Drilling continued to a depth of 5 feet below the first groundwater interval encountered.

The monitoring wells were constructed using flush-threaded Schedule 40, 2-inch diameter polyvinyl chloride (PVC) casing and screen and were equipped with a solid PVC bottom cap. The monitoring wells were constructed with 0.010 slot screens that are 10 feet in length. The well screens were positioned to intersect the groundwater table. The sand pack consisted of 45 minimum grade (mesh) size sand and were installed from the base of the boring to approximately 3 feet above the top of the screen. Approximately 3 feet of bentonite was be placed above the sand pack as a surface seal. The remainder of the borehole to the ground surface was filled with grout.

An 8-inch diameter protective stick-up steel casing was installed over the top of the PVC riser and extended approximately 2.5 feet above the ground surface. The protective casing, equipped with a hinged protective cap and padlock, was secured in the grout placed around the wellhead.

The geologist overseeing the sampling and drilling operation recorded a description of the drilling and sampling activities associated with each location. A USACE-approved boring log was filled out for each completed well.

All soil cuttings from the monitoring well installation were collected, containerized, and managed as IDW as discussed in Section 2.8.

2.4 MONITORING WELL DEVELOPMENT

The newly installed wells were developed two weeks after well installation. Development was accomplished by surging the well and pumping the groundwater with a decontaminated pump or by hand bailing. Once initiated, development proceeded until the following conditions were met:

- The well water was clear to the unaided eye.
- A minimum of three borehole volumes was removed from the well.
- Monitoring parameters (pH, temperature, and specific conductivity) stabilized.

Monitoring well purge water was collected, containerized, and managed as IDW as discussed in Section 2.8.

2.5 GROUNDWATER SAMPLING

During the field event in July 2010, the four monitoring wells were purged and sampled to investigate site-wide ground water conditions. The low flow sampling technique was used to sample the wells. The procedures were developed in consideration of EPA Region I guidance document dated July 30, 1996 (EPA, 1996).

2.5.1 WELL STABILIZATION

A submersible pump equipped with a flow controller was used to purge the monitoring wells prior to sampling. The wells were purged at a rate of 0.5 gallons per minute or less. Before the samples could be collected the water in the well had to come to stabilization. During the pumping of the well the pH, conductivity, turbidity, dissolved oxygen, and temperature of discharge water was monitored with measurements being made once every five minutes. Once stabilized (three consecutive readings of pH within 0.1 unit, specific conductance within 3 percent, turbidity within 10%, dissolved oxygen within 10%, and temperature within 1 °C), the well was considered to be sufficiently purged. Temperature, pH, turbidity, and conductivity values obtained during well purging were recorded in low flow sampling field logs located in Appendix C.

Well MW-06 could not be sampled by low flow purging methods because it is located in the middle of a swampy area which was inaccessible by the vehicle required to operate the pump. Three well volumes were evacuated from this well using a bailer prior to groundwater sampling. These variations to the Work Plan were noted on the sampling forms.

2.5.2 SAMPLING

Sampling began once the water quality parameters stabilized. One groundwater sample was collected from each monitoring well and submitted to TestAmerica, Inc., and analyzed for Target Compound List (TCL) VOCs, TCL semivolatile organic compounds (SVOCs), and total and dissolved TAL metals. The fraction of each groundwater sample collected for dissolved TAL metals analysis was field filtered using an in-line 0.45-micron filter. Groundwater samples were collected using a dedicated disposable bailer at each well. Collected groundwater samples were handled as discussed in Section 2.3. The laboratory analytical procedures used are discussed in Section 2.9.

Monitoring well purge water was collected, containerized, and managed as IDW as discussed in Section 2.8.

2.6 DECONTAMINATION

Prior to beginning any sampling or drilling operations and between each sample/well location, the drill rig and sampling tools were cleaned with potable water. This activity was performed over a temporary decontamination pad, which was constructed prior to commencement of work. After decontamination, tools and drilling equipment were kept on the drill rig resting on clean plastic sheeting to prevent recontamination while moving to the next location.

Submersible pumps used to purge groundwater from wells for development or collection of groundwater samples were decontaminated prior to use. Similarly, all drilling samplers, groundwater, and soil sampling equipment that is not disposable was decontaminated using a sequence of scrubbing, washing with nonphosphate detergent and tap water, and multiple rinses.

2.7 QUALITY CONTROL

Three types of quality assurance/quality control (QA/QC) samples were collected during this investigation: trip blanks, duplicate samples, and matrix spike and matrix spike duplicate (MS/MSD) samples. Equipment rinse blanks were not collected for either matrix because disposable sampling equipment was used to collect the samples.

Trip blanks were collected to ensure VOCs were not introduced to the sample bottles during transport. Trip blanks were collected at a frequency of one sample per cooler of samples to be analyzed for VOCs. Trip blanks were analyzed for VOCs.

Duplicate samples were collected to evaluate the reproducibility of the field sampling and laboratory analysis. One duplicate sample was collected for every ten environmental samples. Duplicate samples were analyzed for the same parameters as the associated environmental samples.

One MS/MSD sample was analyzed for each investigation media sampled. MS and MSD samples were identified clearly as such to the analytical laboratory. MS/MSD samples were analyzed for the same parameters as the associated environmental samples.

Laboratory data was validated according to the procedures outlined in the following guidelines:

- Modifications to the National Functional Guidelines for Organics Data Review; and, USEPA Region III, 1999.
- Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, USEPA-540-R-10-011, USEPA January 2010.

The data validation included the following:

- Completeness of results and supporting data;
- Sample custody, condition upon receipt, and sample preservation;
- Holding times;
- Field and laboratory blank contamination;
- Inductively Coupled Plasma (ICP) interference check sample results;
- MS/MSD recoveries and reproducibility
- QC non-conformances;
- Duplicate sample results; and
- Data qualifiers were added to all laboratory results.

2.8 MANAGEMENT OF IDW

The proposed field investigation generated soil cuttings, monitoring well purge and decontamination water, and used personal protective equipment (PPE). All drill cuttings and drill fluid generated during the investigation activities were placed in U.S. Department of Transportation (DOT)—approved 55-gallon drums, which were stored at a designated location. All groundwater generated during the investigation activities also was placed in DOT-approved 55-gallon drums. The drums were labeled as nonhazardous waste. Sixteen IDW soil drums and five IDW water drums were disposed of off site by CKG Services, 10615 FM 1484, Conroe, TX. The IDW was disposed of as Class 1- Non-hazardous. The used PPE was collected, properly bagged, and disposed of in a municipal trash dumpster.

2.9 LABORATORY ANALYTICAL PROCEDURES

The following subsections present the analytical program for the Phase II ESA. All soil and liquid samples (including IDW samples) collected during the Phase II ESA were analyzed by TestAmerica, Inc. of Denver, Colorado. This TestAmerica, Inc lab is compliant with the most recently published version of the DOD Quality Systems Manual and has current National Environmental Laboratory Accreditation Program certification.

2.9.1 SOIL SAMPLES

A total of 12 soil samples (10 investigation, 1 duplicate, and 1 MS/MSD) were collected for chemical analysis. The collected soil samples were analyzed for the following:

• RCRA metals using EPA Methods 6010B/7471A.

2.9.2 GROUNDWATER SAMPLES

A total of 6 groundwater samples (4 investigation, 1 duplicate, and 1 MS/MSD) were collected for chemical analysis. The collected groundwater samples were analyzed for the following:

- VOCs using EPA Method 8260B;
- SVOCs using EPA Method 8270C; and
- TAL Metals (Total and Dissolved) using EPA Methods 6010B/7470A.

2.9.3 IDW SAMPLES

Soil and liquid IDW samples were analyzed for the following waste profile parameters:

- BTEX using Methods 8260B/DOD;
- Toxicity Characteristic Leaching Procedure (TCLP) RCRA metals using EPA Methods 1311/6010B/7471A for soil and EPA Methods 1311/6010B/7470A for liquid; and
- Total Petroleum Hydrocarbons (TPH) using Method TX 1005.

2.10 SURVEYING

Soil sample, soil boring, and monitoring well locations were surveyed using a handheld Global Positioning System unit. The horizontal accuracy was within 10 feet. No elevation data was collected for the soil sample or monitoring well locations.

3.0 SITE INVESTIGATION RESULTS

3.1 FIELD OBSERVATIONS

Observations made during the field sampling effort revealed that the surface soil was generally composed of a silty clay. There were very dramatic changes in topography in areas where waste was encountered throughout the Site. The most dramatic topography change was in the western section of the Site where there was an approximately 45 foot mound of waste. The waste cap over the former landfill was found to not be uniform in thickness. Metal and concrete debris were sticking up through the landfill cover soil generally in the center of the Site. There were piles of used automobile tires located throughout the Site.

Methane concentrations in ambient air were detected above background conditions in one boring. During the drilling of CB-15, methane was detected above the lower explosive limit (LEL). When this occurred the drilling operations had to be suspended until the methane concentration declined to below the LEL.

The concentrations of VOCs in ambient air were detected above background conditions in two borings. Elevated concentrations of VOCs were detected with a PID at WB-02 (14.0 parts per million [ppm]) and CB-07 (4.8 ppm).

3.2 WASTE AND CAP THICKNESS

Five of the seven borings drilled through the waste encountered buried waste. The thickness of the waste varied from approximately two to 42 feet bgs and consisted of glass, plastic, brick, wood, and rubber debris (Table 1). Where waste was encountered, the overlying soil cover (i.e. cap) ranged in thickness from approximately two to six feet bgs.

Eleven of the 19 borings drilled to determine the thickness of the cap encountered waste. The cap thickness varied from two to eight feet bgs.

During drilling of MW-07 waste was encountered to a depth of eight feet bgs. The cap was two feet thick. Waste was not encountered at any of the other monitoring wells.

Borings where no waste was encountered are considered to have no cap but consist of native soils.

It should be noted that miscellaneous debris of varying amounts was observed in the cover soil. Additionally the number of data points for cap thickness are limited and the cap thickness is variable; therefore, the data may not reflect the actually thickness and conditions away from the known data points. The approximate thickness of the waste and the thickness of the cap throughout the facility are represented in Figures 2 and 3, respectfully. The contour lines incorporate data points from existing site investigations along with the data collected during this Phase II ESA.

Two cross sections, A-A' and B-B', through the facility were reported in an existing Terracon report (Terracon, 2004) to show a three dimensional model of the condition of the municipal waste landfill (Figure 4). During the current sampling effort three data points were added to transect A-A' and two data points were added to transect B-B' to augment the three dimensional model (Figures 5 and 6, respectively).

3.3 SURFACE SOIL SAMPLES ANALYTICAL RESULTS

Previous groundwater sampling at the site (Terracon, 2004) along with groundwater sampling during this investigation has shown that groundwater is not affected above the TRRP Critical PCLs. Based on these findings, Total Soil Combined for a residential site (March, 2010) is considered the soil Critical PCL that was used to assess the data.

Detected soil concentrations are presented in Table 2. Arsenic was detected in nine of the 10 surface samples collected. Arsenic was not detected in SS-04. The concentrations of the arsenic ranged from 2.5 to 6.1 mg/kg. All of the concentrations were below the PCL of 24 mg/kg.

Barium was detected in all of the surface samples collected. The concentrations of barium in the soil samples ranged from 20 mg/kg to 270 mg/kg. All of the concentrations were below the PCL of 7,800 mg/kg.

Cadmium was detected in eight of the 10 surface samples collected. Cadmium was not detected in SS-04 and SS-06. The concentrations of cadmium in the samples ranged from 0.084 mg/kg to 0.78 mg/kg. All of the concentrations were below the PCL of 52 mg/kg.

Chromium was detected in all of the surface samples collected. The concentrations of chromium in the soil samples ranged from 8.5 mg/kg to 20 mg/kg. All of the concentrations were below the PCL of 27,000 mg/kg.

Lead was detected in all of the surface samples collected. The concentrations of lead in the soil samples ranged from 1.9 mg/kg to 93 mg/kg. All of the concentrations were below the PCL of 500 mg/kg.

Mercury was detected in seven of the ten surface soil samples collected. Mercury was not detected in SS-01, SS-04, and SS-06. The concentrations of mercury in the samples ranged from 16 mg/kg to 290 mg/kg. All of the concentrations were below the PCL of 2,100 mg/kg.

Silver and selenium were not detected in any of the surface samples collected.

3.4 GROUNDWATER SAMPLES ANALYTICAL RESULTS

Detected concentrations of chemicals identified in the groundwater samples were compared to the TRRP Tier 1 Residential Critical PCLs. The Critical PCL for each parameter is the lower of the applicable PCLs, Groundwater Ingestion ($^{GW}GW_{Ing}$) or Air Groundwater Inhalation ($^{AIR}GW_{Inh-V}$), and is shown on Table 3. For the parameters analyzed in this investigation, all of the PCLs came from the Texas TRRP Tier I Residential $^{GW}GW_{Ing}$ (March, 2010).

Detected groundwater concentrations are presented in Table 3. Twenty metals were detected in the groundwater samples collected from MW-2R. Two of the metals, total beryllium and total manganese, were detected above the Critical PCLs of four micrograms per liter (ug/L) and 1,100 ug/L, respectively.

The groundwater samples collected from MW-4R contained two VOCs (carbon disulfide and dichlorodifluoromethane). Both of the VOC concentrations were below their respective Critical PCLs. Four SVOCs were detected in the samples but none of the concentrations were above the Critical PCLs. Twenty-four metals were detected in the groundwater sample, but none of the concentrations were above the Critical PCLs.

The groundwater samples collected from MW-6 contained the VOC chloroform. The concentration of chloroform was detected below the Critical PCL. There were two SVOCs that were detected in the groundwater samples from MW-6 (di-n-octyl phthalate and caprolactum).

Both of the concentrations were detected below the critical PCLs. Twenty-five metals were detected in the groundwater sample, but none of the concentrations were above their Critical PCLs.

The groundwater samples collected from MW-7 contained the VOC chloroform. The concentration of chloroform was detected below the Critical PCL. There were seven SVOCs detected in the groundwater sample. Benzo[a]pyrene was detected at a concentration of 2.1 ug/L which is above the Critical PCL of 0.2 ug/L. Thirty-one metals were detected in the groundwater sample. The concentrations of eight of the metals detected were above their respective Critical PCLs.

3.5 DATA VALIDATION RESULTS

Data validation constitutes an independent QA review which was completed on each of the reported laboratory results. Overall, 100% of the data were considered valid as reported or with estimation. It was recommended that the reported analytical results be used only with the qualifying statements presented.

Results of the data validation are presented in Appendix E and the appropriate qualifiers have been added to the laboratory data tables. Qualified data should be considered estimated, as discussed previously in this report. Data that were not qualified should be considered quantitatively and qualitatively valid as reported based on the laboratory deliverables provided.

4.0 CONCLUSIONS AND RECOMMENDATIONS

There were very dramatic changes in topography in areas where waste was encountered throughout the Site. The most dramatic topography change was in the western section of the Site where there was approximately 45 feet of mounded waste.

Five of the seven borings targeted to drill through the waste encountered buried waste (Figure 3). The thickness of the waste varied from approximately two to 42 feet bgs and consisted of glass, plastic, brick, wood, and rubber debris. During drilling of MW-7, which is located along the northern boarder of the project Site, waste was encountered to a depth of eight feet bgs. It can be concluded that the northern extent of the waste is not known because waste was unexpectedly found at MW-7. Previous investigations have found the waste thickness to vary between 4 and 64 feet bgs (Terracon 2004 and 2005).

The overlying soil cover (i.e. cap) ranged in thickness from approximately two to eight feet bgs where waste was encountered (Figure 4). Eleven of the 19 borings drilled to determine the thickness of the cap encountered waste. Previous investigations found the cap thickness to vary between 2 and 13 feet bgs. It can be concluded that the site in its current condition does not have uniform soil cover.

It is recommended that improvements be made to the cap before redevelopment at the Bellfort Landfill can occur. These improvements should include adding to the existing soil cover to establish an acceptable minimum thickness of cap material that is free of debris.

Methane was detected during the drilling of one boring at a concentration high enough to stop drilling. It is recommended that methane should be monitored during future construction activities.

No materials that resembled incinerator ash were encountered during the field investigation activities. The description of the surface materials where soil samples were collected indicated the presence of soil. Metals were detected in all of the surface samples but none of the concentrations were above the Critical PCLs. Based on the lack of elevated metal concentrations in the soil samples it can be concluded that incinerator ash was not found during the Phase II ESA.

Groundwater samples collected from two of the four temporary monitoring wells contained concentrations of metals and one SVOC that exceeded their respective Critical PCLs. Although there are exceedances of the Critical PCLs in the groundwater, the area is served by municipal water. Groundwater will not be used to supply water for any future development of the Site. There is no direct exposure pathway for contaminants in the groundwater to potentially impact human receptors; thus there is no need for further action.

5.0 REFERENCES

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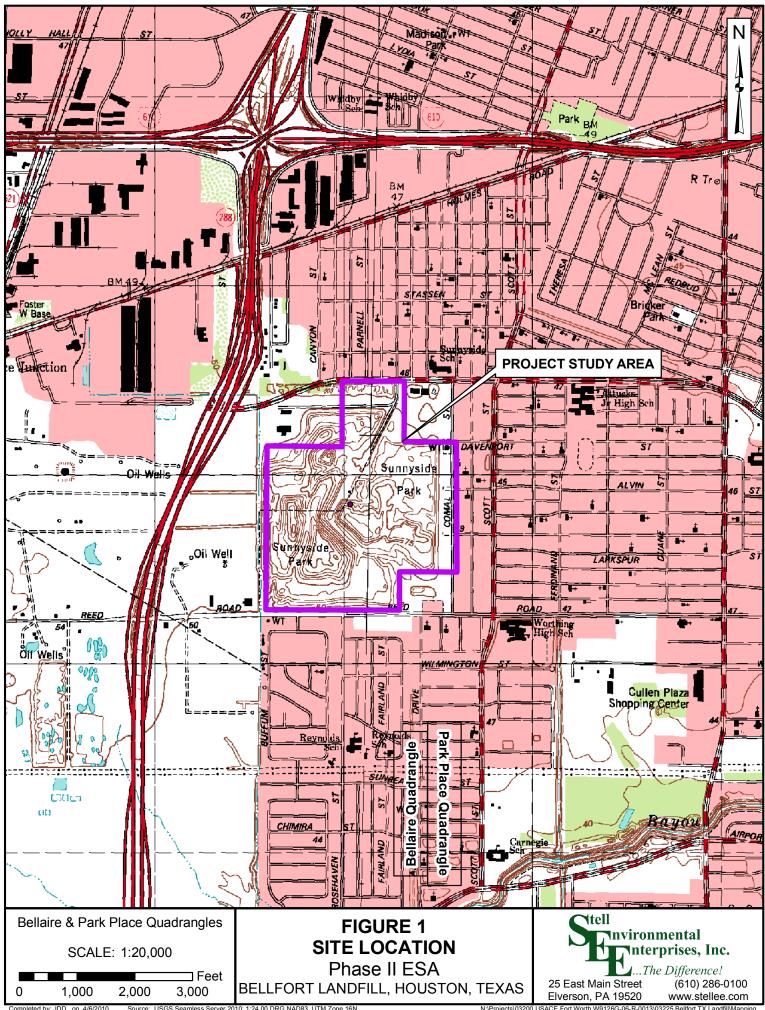
-----. 2005. Supplemental Limited Site Investigation Former Holmes Road Landfill, Houston, Harris County, Texas.

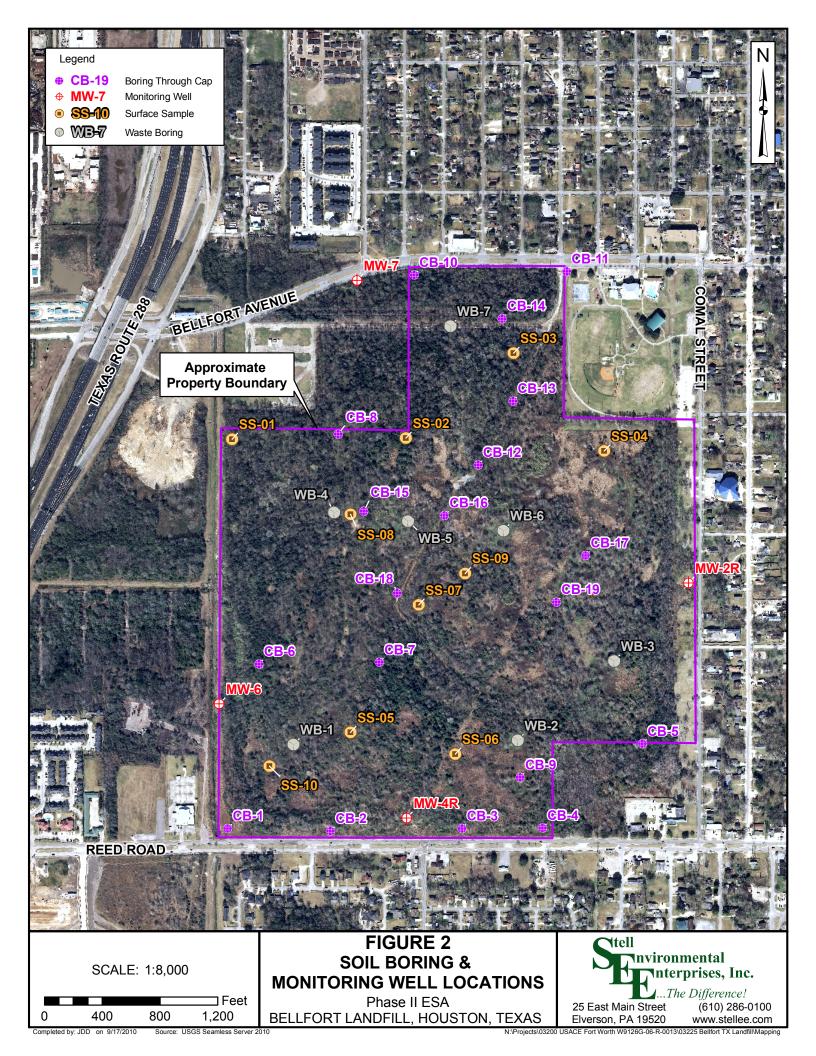
Texas Risk Reduction Program, March 2010. TX TRRP Table 1, Tier 1 Residential Soil PCLs for 30 Acre Source Area: Total Soil Combined.

-----. 2010. TX TRRP Table 3, Tier 1 Residential Groundwater PCLs: ^{GW}GW_{Ing}.

United States Army Corps of Engineers (USACE). 1998. EM 1110-14000, Monitoring Well Design, Installation, and Documentation at Hazardous Toxic and Radioactive Waste Sites.







25 East Main Street Elverson, PA 19520

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F-CON, 10/12/2010 4:13:43 PM USACE Fort Worth W9126G-06-R-0013/03225 Bellfort TX Landfill/CAD\SITE PLAN.dwg,

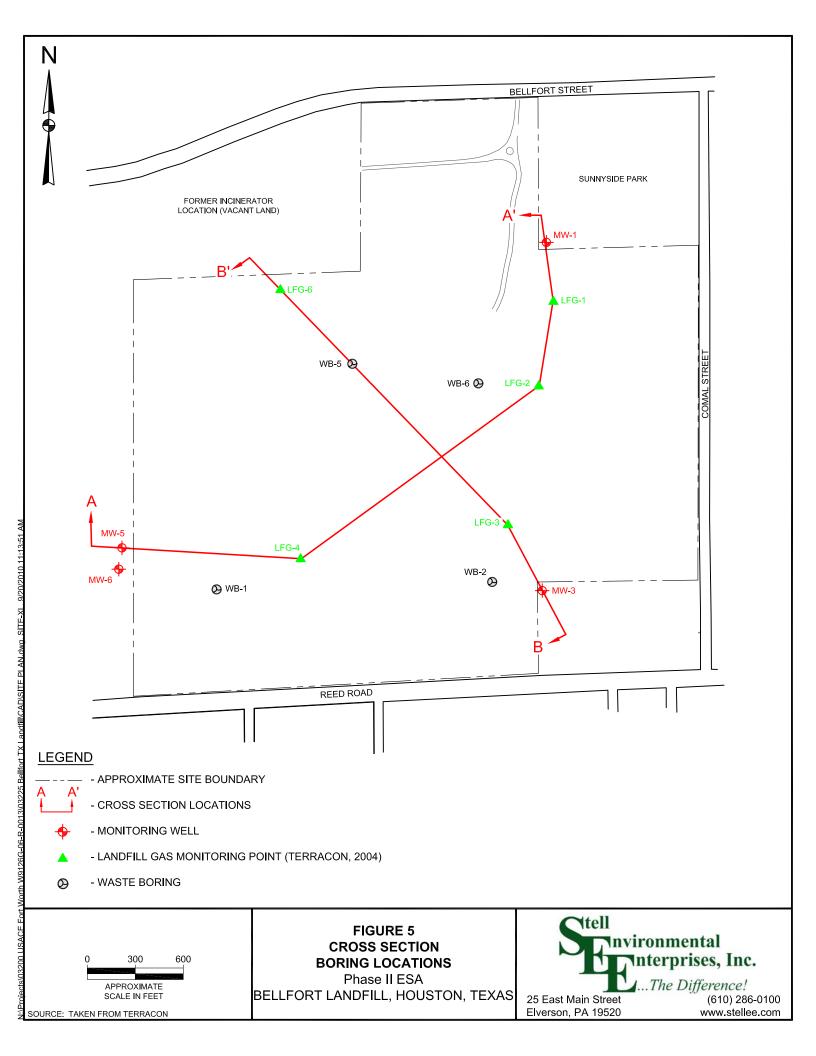
SOURCE: TAKEN FROM TERRACON

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-CON, 10/12/2010 3:52:43 PM

SOURCE: TAKEN FROM TERRACON



NOTES:

- 1. SEE FIGURE 2 FOR CROSS SECTION LOCATION
- ELEVATION IN FEET APPROXIMATED ABOVE MEAN SEA LEVEL FROM THE 1995 USGS 7.5' TOPOGRAPHIC MAP (BELLAIRE, TEXAS)

FIGURE 6
CROSS SECTION A-A
Phase II ESA
BELLFORT LANDFILL, HOUSTON, TEXAS



SOURCE: TAKEN FROM TERRACON

- 1, SEE FIGURE 2 FOR CROSS SECTION LOCATION
- 2. ELEVATION IN FEET APPROXIMATED ABOVE MEAN SEA LEVEL FROM THE 1995 USGS 7.5' TOPOGRAPHIC MAP (BELLAIRE, TEXAS)

FIGURE 7 CROSS SECTION B-B Phase II ESA BELLFORT LANDFILL, HOUSTON, TEXAS

Invironmental nterprises, Inc.

25 East Main Street (610) 286-0100

SOURCE: TAKEN FROM TERRACON

N:Projects/03200 USACE Fort Worth W9126G-06-R-0013/03225 Bellfort TX Landfill/CAD/SITE PLAN.dwg, B-B, 10/8/2010 9:29:20 AM

Table 1 Soil Boring Depth, Cap Thickness, and Waste Thickness Summary Phase II ESA

Bellfort Landfill, Houston, TX

Soil Boring/Monitoring Well ID	Total Depth of Boring (Feet bgs)	Thickness of Cap (Feet)	Thickness of Waste (Feet)	Notes
CB-1	10	NO MSW	0	No waste identified. No cap identified. All native soil.
CB-2	10	NO MSW	0	No waste identified. No cap identified. All native soil.
CB-3	10	NO MSW	0	No waste identified. No cap identified. All native soil.
CB-4	10	NO MSW	0	No waste identified. No cap identified. All native soil.
CB-5	10	NO MSW	0	No waste identified. No cap identified. All native soil.
CB-6	10	NO MSW	0	Hit refusal during first two attempts at 5 feet bgs. Groundwater detected at 7 feet bgs. No waste identified. No cap identified. All native soil.
CB-7	10	4	UNK	Trash including plastic, wood, and cloth detected at 4 feet bgs. Petroleum smell to soil. PID hit of 4.8 at 7 feet bgs.
CB-8	10	4	5	Trash including glass, tar, and charcoal detected between 4 and 9 feet bgs.
CB-9	10	8	UNK	Trash including plastic, fiberglass insulation, and wood detected at 8 feet bgs.
CB-10	10	6	UNK	Groundwater detected at 6 feet bgs. Mixed plastic and glass detected throughout the boring. No cap present.
CB-11	10	2	1	Few pieces of glass and plastic encountered between 2 and 3 feet bgs. Cap thickness is 2 feet.
CB-12	10	1	4	Metal, glass, and wood fragments detected between 1 and 5 feet bgs. Groundwater detected at 6 feet bgs.
CB-13	10	2	4	Plastic trash encountered between 2 and 6 feet bgs. Groundwater detected at 9 feet bgs.
CB-14	10	6	2	Small amount of plastic detected between 6 and 8 feet bgs.
CB-15	10	4	UNK	Tar soaked cloth and wood fragments detected at 4 feet bgs. Methane concentration spike during drilling operations. Drilling operations halted to let methane disperse.

Table 1 Soil Boring Depth, Cap Thickness, and Waste Thickness Summary Phase II ESA

Bellfort	Landfill,	Houston,	TX
----------	-----------	----------	----

Soil Boring/Monitoring Well ID	Total Depth of Boring (Feet bgs)	Thickness of Cap (Feet)	Thickness of Waste (Feet)	Notes
CB-16	6	6	UNK	Concrete refusal at 6 feet bgs. Six other holes attempted with the same result.
CB-17	10	3	UNK	Plastic and wood detected at 3 feet bgs. Groundwater detected at 9 feet bgs.
CB-18	10	2	UNK	Glass and metal detected at 2 feet bgs. Groundwater detected at 6 feet bgs.
CB-19	10	7	UNK	Plastic detected at 7 feet bgs.
MW-2R	55	NO MSW	0	Groundwater measured at 48 feet bgs. All native soil.
MW-4R	35	NO MSW	0	Groundwater measured at 30 feet bgs. All native soil.
MW-6	25	NO MSW	0	Groundwater measured at 16 feet bgs. All native soil.
MW-7	25	2	6	Groundwater measured at 18 feet bgs. Plastic and glass detected between 2 and 8 feet bgs.
WB-1	55	3	42	Groundwater detected at 31 feet bgs. Glass, plastic, and brick detected between 3 and 45 feet bgs.
WB-2	25	8	8	Groundwater detected at 21 feet bgs. Metal, rubber, glass, and plastic detected between 8 and 16 feet bgs.
WB-3	10	NO MSW	0	No waste identified. No cap identified. All native soil.
WB-4	32	2	24	Glass and plastic detected between 2 and 26 feet bgs.
WB-5	24	2	14	Glass and plastic detected between 3 and 16 feet bgs. Three holes were attempted and hit refusal at 4 feet bgs.
WB-6	20	2	10	Groundwater detected at 17 feet bgs. Glass, plastic, wood, and rubber detected between 2 and 12 feet bgs.
WB-7	10	NO MSW	0	No waste identified. No cap identified. All native soil.

Notes:

bgs-below ground surface

NO MSW- No municipal solid waste found

UNK-unknown waste depth



Table 2
Detected Soil Concentrations
Phase II ESA
Bellfort Landfill, Houston, TX

Sample ID	Parameter	Result	MDL	Unit	Lab Qualifier	Validation Qualifier	TRRP Residential Soil PCLs
SS-01	Arsenic	3.8	0.66	mg/Kg			24
SS-01	Barium	220	0.076	mg/Kg			7,800
SS-01	Cadmium	0.11	0.041	mg/Kg	J	J	52
SS-01	Chromium	10	0.058	mg/Kg			27,000
SS-01	Lead	14	0.27	mg/Kg		J	500
SS-02	Arsenic	2.5	0.66	mg/Kg			24
SS-02	Barium	100	0.076	mg/Kg			7,800
SS-02	Cadmium	0.74	0.041	mg/Kg			52
SS-02	Chromium	10	0.058	mg/Kg	J		27,000
SS-02	Lead	60	0.27	mg/Kg	J	J	500
SS-02	Mercury	56	5.5	ug/Kg		J-	2,100
SS-03	Arsenic	3.2	0.66	mg/Kg			24
SS-03	Barium	160	0.076	mg/Kg			7,800
SS-03	Cadmium	0.66	0.041	mg/Kg			52
SS-03	Chromium	15	0.058	mg/Kg			27,000
SS-03	Lead	93	0.27	mg/Kg		J	500
SS-03	Mercury	120	5.5	ug/Kg		J-	2,100
SS-04	Barium	20	0.076	mg/Kg			7,800
SS-04	Chromium	1.6	0.058	mg/Kg	J	J	27,000
SS-04	Lead	1.9	0.27	mg/Kg		J	500
SS-05	Arsenic	4.4	0.66	mg/Kg			24
SS-05	Barium	270	0.076	mg/Kg			7,800
SS-05	Cadmium	0.17	0.041	mg/Kg	J	J	52
SS-05	Chromium	13	0.058	mg/Kg			27,000
SS-05	Lead	43	0.27	mg/Kg		J	500
SS-05	Mercury	290	5.5	ug/Kg		J-	2,100

Table 2 Detected Soil Concentrations Phase II ESA Bellfort Landfill, Houston, TX

Sample ID	Parameter	Result	MDL	Unit	Lab Qualifier	Validation Qualifier	TRRP Residential ¹ Soil PCLs
SS-06	Arsenic	3.7	0.66	mg/Kg			24
SS-06	Barium	140	0.076	mg/Kg			7,800
SS-06	Chromium	14	0.058	mg/Kg			27,000
SS-06	Lead	8.8	0.27	mg/Kg		J	500
SS-07	Arsenic	5.2	0.66	mg/Kg			24
SS-07	Barium	270	0.076	mg/Kg			7,800
SS-07	Cadmium	0.11	0.041	mg/Kg	J	J	52
SS-07	Chromium	8.5	0.058	mg/Kg			27,000
SS-07	Lead	62	0.27	mg/Kg		J	500
SS-07	Mercury	73	5.5	ug/Kg		J-	2,100
SS-08	Arsenic	3.1	0.66	mg/Kg			24
SS-08	Barium	67	0.076	mg/Kg			7,800
SS-08	Cadmium	0.78	0.041	mg/Kg			52
SS-08	Chromium	8.5	0.058	mg/Kg			27,000
SS-08	Lead	68	0.27	mg/Kg		J	500
SS-08	Mercury	98	5.5	ug/Kg		J-	2,100
SS-09	Arsenic	6.1	0.66	mg/Kg			24
SS-09	Barium	220	0.076	mg/Kg			7,800
SS-09	Cadmium	0.12	0.041	mg/Kg	J	J	52
SS-09	Chromium	13	0.058	mg/Kg			27,000
SS-09	Lead	33	0.27	mg/Kg		J	500
SS-09	Mercury	29	5.5	ug/Kg		J-	2,100
SS-10	Arsenic	4.3	0.66	mg/Kg			24
SS-10	Barium	180	0.076	mg/Kg			7,800
SS-10	Cadmium	0.084	0.041	mg/Kg	J	J	52
SS-10	Chromium	20	0.058	mg/Kg			27,000
SS-10	Lead	21	0.27	mg/Kg		J	500
SS-10	Mercury	16	5.5	ug/Kg		J-	2,100

Notes

MDL - Method Detection Limit

J- The reported value was quantitatively estimated because of a QC exceedance or because the concentration was below the Limit Of Quantitation.

J- – The reported value should be considered a biased low quantitative estimate.

¹ TRRP Residential Soil PCLs - TX TRRP Table 1, Tier 1 Residential Soil PCLs for 30 Acre Source Area: Total Soil Combined; Updated 31March2010

Table 3 Detected Groundwater Concentrations and TRRP Exceedances Phase II ESA Bellfort Landfill, Houston,TX

						Lab	Validation	TRRP Residential ¹
Sample ID	Parameter	Fraction	Result	MDL	Unit	Qualifier		Groundwater
						Quanner	Quamici	Critical PCLs
MW-2R	Total Barium	M	170	0.58	ug/L			2,000.0
MW-2R	Total Calcium	M		34	ug/L			NL
MW-2R	Total Copper	M	3.2	1.4	ug/L	J Q	J	1,300.0
MW-2R	Total Lead	M	120,000		ug/L			15.0
MW-2R	Total Nickel	M	4,500	240	ug/L			490.0
MW-2R	Total Thallium	M	1.9	1.1	ug/L	J	J	2.0
MW-2R	Total Beryllium	M	1,100	22	ug/L	-	J	4.0
MW-2R	Total Manganese	M	600	0.25	ug/L	Q		1,100.0
MW-2R	Total Sodium	M	650,000	92	ug/L	В		NL
MW-2R	Total Zinc	M	5.2	4.5	ug/L	J	J	7,300.0
MW-2R	Dissolved Barium	M	170	0.58	ug/L			2,000.0
MW-2R	Dissolved Cadmium	M	0.55	0.45	ug/L	J	J	5.0
MW-2R	Dissolved Calcium	M	210,000	34	ug/L			NL
MW-2R	Dissolved Copper	M	3.2	1.4	ug/L	J Q	J	1,300.0
MW-2R	Dissolved Magnesium	M	130,000	11	ug/L			NL
MW-2R	Dissolved Manganese	M	580	0.25	ug/L	Q		1,100.0
MW-2R	Dissolved Potassium	M	4,500	240	ug/L			NL
MW-2R	Dissolved Sodium	M	660,000	92	ug/L			NL
MW-2R	Dissolved Zinc	M	5.4	4.5	ug/L	J	J	7,300.0
MW-2R	Total Mercury	M	0.033	0.027	ug/L	J	J	2.0
MW-4R	Di-n-butyl phthalate	OS	12	1.2	ug/L	J	J	2,400.0
MW-4R	Diethyl phthalate	OS	0.97	0.38	ug/L	J	J	20,000.0
MW-4R	Acetophenone	OS	0.69	0.24	ug/L	J	J	1,500.0
MW-4R	Caprolactam	OS	140	5.0	ug/L		J	12,000.0
MW-4R	Carbon disulfide	OV	0.83	0.45	ug/L	J	J	2,400.0
MW-4R	Dichlorodifluoromethane	OV	1.0	0.31	ug/L	J	J	4,900.0
MW-4R	Total Aluminum	M	5,200	18	ug/L		J	24,000.0
MW-4R	Total Arsenic	M	6.1	4.4	ug/L	J	J	10.0
MW-4R	Total Barium	M	340	0.58	ug/L			2,000.0
MW-4R	Total Calcium	M	170,000	34	ug/L			NL
MW-4R	Total Copper	M	10	1.4	ug/L	JQ	J	1,300.0
MW-4R	Total Cobalt	M	2.4	1.2	ug/L	J	J	7.3
MW-4R	Total Iron	M	3.6	2.6	ug/L	J	J	NL
MW-4R	Total Lead	M	120,000	11	ug/L			15.0
MW-4R	Total Magnesium	M	6.1	1.3	ug/L	JQ	J	NL
MW-4R	Total Nickel	M	3,900	240	ug/L			490.0

Table 3 Detected Groundwater Concentrations and TRRP Exceedances Phase II ESA Bellfort Landfill, Houston,TX

						Lab	Validation	TRRP Residential ¹
Sample ID	Parameter	Fraction	Result	MDL	Unit	Qualifier		Groundwater
								Critical PCLs
MW-4R	Total Thallium	M	13	1.1	ug/L	J	J	2.0
MW-4R	Total Beryllium	M	5,000	22	ug/L		J	4.0
MW-4R	Total Manganese	M	880	0.25	ug/L	Q		1,100.0
MW-4R	Total Sodium	M	390,000	92	ug/L	В		NL
MW-4R	Total Zinc	M	27	4.5	ug/L	J	J	7,300.0
MW-4R	Dissolved Barium	M	310	0.58	ug/L			2,000.0
MW-4R	Dissolved Calcium	M	160,000	34	ug/L			NL
MW-4R	Dissolved Copper	M	2.3	1.4	ug/L	JQ	J	1,300.0
MW-4R	Dissolved Iron	M	410	22	ug/L			NL
MW-4R	Dissolved Magnesium	M	110,000	11	ug/L			NL
MW-4R	Dissolved Manganese	M	800	0.25	ug/L	Q		1,100.0
MW-4R	Dissolved Potassium	M	2,100	240	ug/L	J	J	NL
MW-4R	Dissolved Sodium	M	370,000	92	ug/L			NL
MW-4R	Dissolved Vanadium	M	1.2	1.1	ug/L	JQ	J	1.7
MW-6	Di-n-octyl phthalate	OS	3.8	0.35	ug/L	J	J	490.0
MW-6	Caprolactam	OS	490	5.0	ug/L		J	12,000.0
MW-6	Chloroform	OV	0.24	0.16	ug/L	J	J	240.0
MW-6	Total Aluminum	M	2,700	18	ug/L		J	24,000.0
MW-6	Total Arsenic	M	5.0	4.4	ug/L	J	J	10.0
MW-6	Total Barium	M	590	0.58	ug/L			2,000.0
MW-6	Total Calcium	M	200,000	34	ug/L			NL
MW-6	Total Copper	M	12	1.4	ug/L	JQ	J	1,300.0
MW-6	Total Cobalt	M	1.3	1.2	ug/L	J	J	7.3
MW-6	Total Iron	M	3.8	2.6	ug/L	J	J	NL
MW-6	Total Lead	M	42,000	11	ug/L			15.0
MW-6	Total Magnesium	M	5.2	1.3	ug/L	JQ	J	NL
MW-6	Total Nickel	M	5,500	240	ug/L			490.0
MW-6	Total Thallium	M	6.0	1.1	ug/L	J	J	2.0
MW-6	Total Beryllium	M	4,500	22	ug/L		J	4.0
MW-6	Total Manganese	M	360	0.25	ug/L	Q		1,100.0
MW-6	Total Sodium	M	190,000	92	ug/L	В		NL
MW-6	Total Zinc	M	19	4.5	ug/L	J	J	7,300.0
MW-6	Dissolved Barium	M	380	0.58	ug/L			2,000.0
MW-6	Dissolved Calcium	M	180,000	34	ug/L			NL
MW-6	Dissolved Copper	M	2.3	1.4	ug/L	JQ	J	1,300.0
MW-6	Dissolved Iron	M	1,100	22	ug/L			NL

Table 3 Detected Groundwater Concentrations and TRRP Exceedances Phase II ESA Bellfort Landfill, Houston,TX

Sample ID	Parameter	Fraction	Result	MDL	Unit	Lab Qualifier	Validation Qualifier	TRRP Residential ¹ Groundwater
								Critical PCLs
MW-6	Dissolved Magnesium	M	38,000	11	ug/L			NL
MW-6	Dissolved Manganese	M	240	0.25	ug/L	Q		1,100.0
MW-6	Dissolved Potassium	M	5,400	240	ug/L			NL
MW-6	Dissolved Sodium	M	210,000	92	ug/L			NL
MW-6	Dissolved Vanadium	M	3.4	1.1	ug/L	JQ	J	1.7
MW-6	Dissolved Zinc	M	5.4	4.5	ug/L	J	J	7,300.0
MW-7	N-Nitrosodiphenylamine	OS	0.97	0.44	ug/L	J	J	190.0
MW-7	Benzo[a]pyrene	OS	2.1	0.31	ug/L	JQ	J	0.2
MW-7	Di-n-butyl phthalate	OS	69	1.2	ug/L		J	2,400.0
MW-7	3,3'-Dichlorobenzidine	OS	R	2.0	ug/L	UJ		2.0
MW-7	Diethyl phthalate	OS	5.1	0.38	ug/L	J	J	20,000.0
MW-7	Acetophenone	OS	0.29	0.24	ug/L	J	J	1,500.0
MW-7	Caprolactam	OS	210	5.0	ug/L		J	12,000.0
MW-7	Chloroform	OV	0.26	0.16	ug/L	J	J	240.0
MW-7	Total Aluminum	M	38,000	18	ug/L	J	J	24,000.0
MW-7	Total Arsenic	M	32	4.4	ug/L			10.0
MW-7	Total Barium	M	650	0.58	ug/L			2,000.0
MW-7	Total Calcium	M	140,000	34	ug/L			NL
MW-7	Total Chromium	M	35	0.66	ug/L	Q		100.0
MW-7	Total Copper	M	34	1.4	ug/L	Q		1,300.0
MW-7	Total Cobalt	M	28	1.2	ug/L			7.3
MW-7	Total Iron	M	35,000	22	ug/L	J	J	NL
MW-7	Total Lead	M	27	2.6	ug/L			15.0
MW-7	Total Magnesium	M	38,000	11	ug/L			NL
MW-7	Total Nickel	M	84	1.3	ug/L	Q		490.0
MW-7	Total Potassium	M	6,000	240	ug/L			NL
MW-7	Total Vanadium	M	56	1.1	ug/L			1.7
MW-7	Total Beryllium	M	2.1	0.47	ug/L			4.0
MW-7	Total Manganese	M	1,500	0.25	ug/L	Q		1,100.0
MW-7	Total Sodium	M	420,000	92	ug/L	В		NL
MW-7	Total Zinc	M	80	4.5	ug/L	J	J	7,300.0
MW-7	Dissolved Arsenic	M	23	4.4	ug/L	J	J	10.0
MW-7	Dissolved Barium	M	440	0.58	ug/L			2,000.0
MW-7	Dissolved Calcium	M		34	ug/L			NL
MW-7	Dissolved Chromium	M	1.0	0.66	ug/L	J Q	J	100.0
MW-7	Dissolved Cobalt	M	17	1.2	ug/L			7.3

Table 3

Detected Groundwater Concentrations and TRRP Exceedances Phase II ESA

Bellfort Landfill, Houston, TX

Sample ID	Parameter	Fraction	Result	MDL	Unit	Lab Qualifier	Validation Qualifier	TRRP Residential ¹ Groundwater Critical PCLs
MW-7	Dissolved Copper	M	2.6	1.4	ug/L	JQ	J	1,300.0
MW-7	Dissolved Iron	M	1,700	22	ug/L			NL
MW-7	Dissolved Magnesium	M	33,000	11	ug/L			NL
MW-7	Dissolved Manganese	M	1,200	0.25	ug/L	Q		1,100.0
MW-7	Dissolved Nickel	M	57	1.3	ug/L			490.0
MW-7	Dissolved Potassium	M	960	240	ug/L	J	J	NL
MW-7	Dissolved Sodium	M	460,000	92	ug/L			NL
MW-7	Dissolved Vanadium	M	1.4	1.1	ug/L	JQ	J	1.7
MW-7	Dissolved Zinc	M	6.0	4.5	ug/L	J	J	7,300.0

Notes:

- J- The reported value was quantitatively estimated because of a QC exceedance or because the concentration was below the Limit Of Quantitation.
- R The "non-detect" result for this compound was rejected.
- B Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
- Q One or more quality contol criteria failed.

MDL - Method Detection Limit

Highlighted - concentration exceeds TX TRRP Table 3, Tier 1 Residential Groundwater PCLs: GWGWIng; Updated 31March2010

M-metals

OV - Volatile Organic Compounds

OS - Semivolatile Organic Compounds

NL - No limit

¹ TRRP Residential Groundwater PCLs - TX TRRP Table 3, Tier 1 Residential Groundwater PCLs: GWGWIng; Updated 31March2010

APPENDIX A SITE PHOTOLOG



PHOTOGRAPHIC LOG

Client Name:

US Army Corps of Engineers, Fort Worth

Site Location:

Bellfort Landfill, Houston, Texas

SEE Project No.

03226

Photo No. Date: 6/21/10

Direction Photo

Taken:

West

Description:

Drilling of MW-2R



 Photo No.
 Date:

 2
 6/21/10

Direction Photo Taken:

East

Description:

Drilling of MW-2R





Client Name:

US Army Corps of Engineers, Fort Worth

Site Location:

Bellfort Landfill, Houston, Texas

SEE Project No. 03226

Photo No.

Date: 6/21/10

Direction Photo

Taken:

North

Description:

Sample from MW-2R from a depth of 10 to 15 feet bgs.



Photo No.

Date: 6/22/10

Direction Photo

Taken: South

Description:

Drilling of CB-11





Client Name:

US Army Corps of Engineers, Fort Worth

Site Location:

Bellfort Landfill, Houston, Texas

SEE Project No.

03226

Photo No. Date: 5 6/22/10

Direction Photo

Taken:

North

Description:

Drilling of CB-11 adjacent to Bellfort Street.



 Photo No.
 Date:

 6
 6/22/10

Direction Photo

Taken: North

Description:

Drill rig and support truck during the drilling of CB-11.





03226

Client Name:

US Army Corps of Engineers, Fort Worth

Site Location:

Bellfort Landfill, Houston, Texas

SEE Project No.

Photo No.

Date: 6/23/10

Direction Photo

Taken:

West

Description:

Geoprobe used for WB-6.



Photo No. Date:

8 6/23/10

Direction Photo Taken:

North

Description:

Sample from WB-6 with municipal solid waste in sample.





Client Name: Site Location: SEE Project No.

Photo No. Date: 9 6/24/10

Direction Photo Taken:North

Description:

Buggy drill rig to drill WB-1.



Photo No. Date: 6/24/10
Direction Photo

Taken: South

Description:

Sample collected from WB-1 from a depth of 10 to 15 feet bgs.

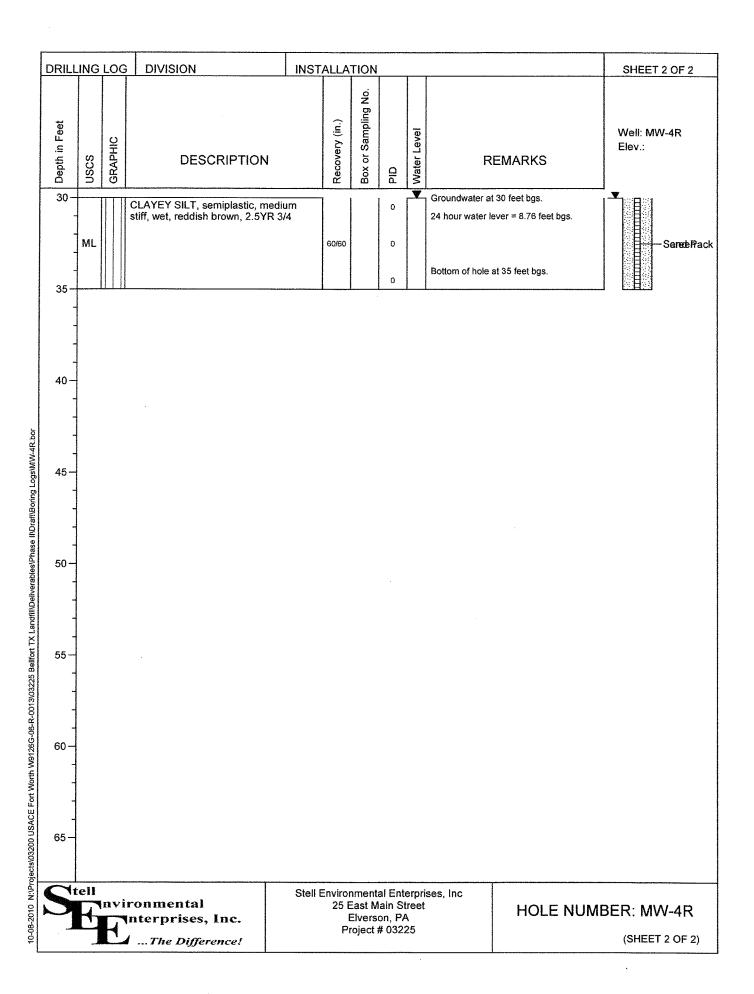


APPENDIX B SOIL BORING LOGS

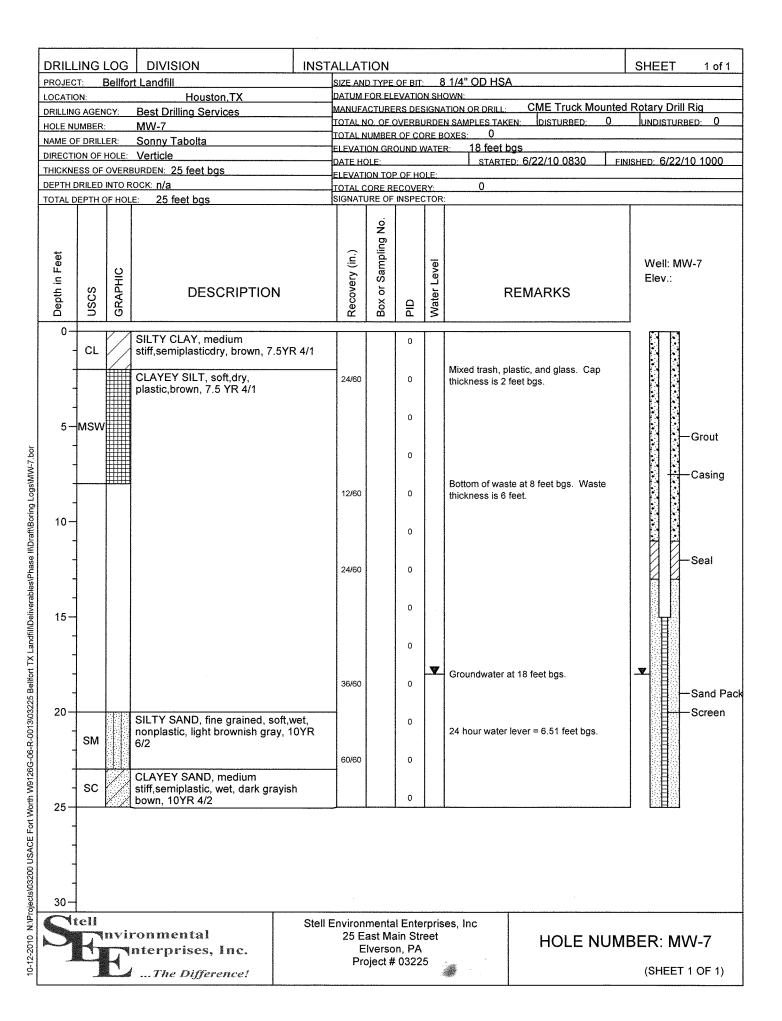
DRILL				INST	[ALLA	TION					SHEET 1 OF 2			
PROJEC		Bell	fort Landfill	·	7	ND TYP			8 1/4" OD HS	A				
DRILLING		NOV.	Houston,TX			A FOR E			HOWN: IATION OR DRILL	CME Truck Mount	ed Rotary Drill Pig			
HOLE NO			Best Drilling Services MW-2R		5				EN SAMPLES TA		UNDISTURBED: 0			
NAME OF			Sonny Tabolta						BOXES: 0		MAIDINI ONDED. U			
		-	: Verticle		ELEVA	TION G	ROUND	WAT	ER: 48 feet	bgs				
			RBURDEN: 55 feet bas		DATE					ED: 6/21/10 0945	FINISHED: 6/21/10 1230			
			ROCK: n/a		1	TION TO								
TOTAL D	***************************************					CORE I			0		***************************************			
			T	***************************************	10.0	T	I	Ī	<u>. </u>					
Depth in Feet	nscs	GRAPHIC	DESCRIPTION	N	Recovery (in.)	Box or Sampling No.	PID	Water Level	F	REMARKS	Well: MW-2R Elev.:			
0 -			CLAYEY SILT, plastic, soft, of dark grayish brown, 10YR 3/2	dry, very 2			0		mowed.	ently seeded and freshly				
					48/60	Andrea - Princia de Casandra d	0		No waste was boring.	encountered during				
5	ML				And the second s		0							
10			SILTY CLAY, plastic, mediun	n stiff,	60/60		0		• .					
	CL		dry, yellowish red, 5ÝR 4/6		60 <i>/</i> 60		0							
15			CH TV CLAV mlastic	a stiff			0				Grout			
1	CL		SILTY CLAY, plastic, medium dry, light brownish gray 2.5Y with orange/brown mottles	। ऽधम, 6/2,	60/60		0							
20-			SILTY CLAY, plastic, stiff, dry		60/60		0							
1			yellowish red, 5YR 4/6				0							
25	CL						0							
					60/60		0							
30-							U		wa wa					
S	tell Stell nvironmental nterprises, Inc.					East M Elverso	ain Sti on, PA	eet	ses, Inc	HOLE NUM	BER: MW-2R			
	The Difference!					Project # 03225 (SHEET 1 OF 2)								

DRILLING LOG	DIVISION	INSTAL	LATI	ION					SHEET 2 OF 2
Depth in Feet USCS GRAPHIC	DESCRIPTION	:	Recovery (in.)	Box or Sampling No.	QId	Water Level	R	REMARKS	Well: MW-2R Elev.:
50 SM Si 2.	ILTY SAND, well sorted, fine rained, soft, wet, gray, 2.5Y 6 ILTY CLAY, plastic, stiff, wet. 5Y 5/1	60 60 67 67 67 60	0/60			•	Groundwater a 24 hour water I	ever = 10.82 feet bgs.	-Seal -Sand Pa -Screen
	onmental terprises, Inc. The Difference!	Stell Environmental Enterprises, Inc 25 East Main Street Elverson, PA Project # 03225						HOLE NUM	IBER: MW-2R (SHEET 2 OF 2)

	DRILL			· · · · · · · · · · · · · · · · · · ·	INS	TALLA						SHEET 1 OF 2
-	PROJEC		Bellf	ort Landfill		_	ND TYP			8 1/4" OD HS/	Α	
ŀ	DRILLIN		NCY:	Houston,TX Best Drilling Services		_				ATION OR DRILL:	CME Truck Mo	unted Rotary Drill Rig
	HOLE N			MW-4R						EN SAMPLES TAK	EN: DISTURBED:	0 UNDISTURBED: 0
	NAME O	FDRIL	LER:	Sonny Tabolta		1	NUMBE				hae	
Г				Verticle		DATE		ZOOND	WAI		ED: 6/21/10 1400	FINISHED: 6/21/10 1550
г				RBURDEN: 35 feet bgs ROCK: n/a		3	TION TO					
г	TOTAL D						CORE I			0 R:		
							Γ					
	Depth in Feet	nscs	GRAPHIC	DESCRIPTION	I	Recovery (in.)	Box or Sampling No.	PID	Water Level	R	EMARKS	Well: MW-4R Elev.:
	0			CLAYEY SILT, plastic, soft, d dark brown, 7.5YR 3/2	ry, very		<u> </u>	0		No waste enco	untered in boring.	
-	-					48/60		0				
	5-	ML						0				
fW-4R.bor	-					elisassida de la companya de la comp		0				
ng Logs\N	_		200	Gravel layer, 1/2 to 1 inch in s	ize	36/60		0				
NDraff\Bon	10 <i>-</i> -			SILTY CLAY, plastic, soft, dry reddish brown, 2.5YR 4/4				0				Grout
es/Phase	-					60/60		0				Casing
Deliverabl	- 15-	CL						0				
rX Landfill	_					48/60		0				
:5 Bellfort	-	C.		Wet layer of gray CLAY, 2.5Y	R 5/1			0				
-0013/0322	20 —	CL		SILTY CLAY, semiplastic, stiff dark reddish brown, 2.5YR 3/4	f, dry,	60/60		0				
126G-06-R	-							0				Seal
Worth W9	25	CL						0				
ACE Fort	-					48/60		0			•	—Sand Pac
03200 US	-							0				—Sand Paci
ojects	30 –		<u> </u>					l	V	Groundwater a	t 30 feet bgs.	
10-08-2010 N:Projects/03200 USACE Fort Worth W9126G-08-R-0013/03225 Bellfort TX Landfill/Deliverables/Phase INDraft/Boring Logs/MV/4R.bor	S	Stell Ste Invironmental Interprises, Inc. The Difference!			Stell	25	nment East M Elvers roject	lain Si on, P <i>l</i>	treet A	ses, Inc	HOLE NU	JMBER: MW-4R (SHEET 1 OF 2)



DRILL			DIVISION ort Landfill	INST	ALLA SIZE AI	TION		T:	8 1/4" OD HS	A	SHEET 1 OF 1
LOCATIO			Houston,TX		DATUM	FOR E	LEVATI	ON S	HOWN:		
DRILLING			Best Drilling Services		3				ATION OR DRILL	3	ed Rotary Drill Rig
HOLE N			MW-6						EN SAMPLES TAK BOXES: 0	EN: IDISTURBED: U	IUNDISTURBED: U
NAME O			Sonny Tabolta		-	TION GE				bas	
			: Verticle		DATE F					•	FINISHED: 6/23/10 1130
			RBURDEN: 25 feet bgs		5	TION TO					
			ROCK: n/a		TOTAL SIGNAT	CORE			0		
TOTAL D	EPIH	UF HC	DLE: 25 feet bgs		SIGNA	ORE O	FINSPE	1	K:		***************************************
Depth in Feet	nscs	GRAPHIC	DESCRIPTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	R	EMARKS	Well: MW-6 Elev.:
0-			CLAYEY SILT, plastic, stiff, dry, v dark brown, 10YR 3/2	ery			0		No waste enco	untered in boring.	
_	ML				48/60		0				
5-			SILTY SAND, nonplastic, fine gra				0				
-	SM		well sorted, soft, dry, brown 10YF 4/3	₹			0				Grout
-	sw		SAND, Well Graded, fine grained soft, dry, yellowish brown, 10YR !	l, 5/4	60/60		0				Casing
10 – -	60		SANDY CLAY, fine grained, soft, plastic, dry, gray, 10YR 5/1				0				
-	SC	//	CILTY CLAY		60/60	,	0				Seal
15-			SILTY CLAY, plastic, medium stif moist, reddish brown 5YR 4/3	π,			0				
-					60/60		0	V	Groundwater a	t 16 feet bgs. ever = 21.45 feet bgs.	
-	CL						0				—Sand P
20-							0				Screen
4					60/60		0				
25 -							0		Bottom of hole	at 25 feet bgs.	
30-											
1	ell	nvi	ronmental Interprises, Inc.	Stell I	25 E	nment East M	lain Si	reet	ses, Inc	HOLE NUI	MBER: MW-6
		世	The Difference!			roject					(SHEET 1 OF 1)



DRILLING	LOG	DIVISION	INST	ALLATION					SHEET 1 OF 2
		rt Landfill	1 17.5	SIZE AND TYPE O	F BIT:	8 1/4	" OD I	HSA	
LOCATION:		uston, TX		DATUM FOR ELEV					
DRILLING AGE		Best Drilling Services		MANUFACTURER					CME Model 75 Truck Mounted Rotary Rig
HOLE NUMBER	₹:	WB-1		TOTAL NO. OF O					N: DISTURBED: 0 UNDISTURBED: 0
NAME OF DRIL	LER:	Sonny Tabolta		TOTAL NUMBER					The state of the s
DIRECTION OF	HOLE:	Vertical		ELEVATION GROU	UND WA	TER:	31 fe		gs D: 6/25/10 1240 FINISHED: 6/25/10 1540
THICKNESS OF	OVER	BURDEN:55 feet bas		DATE HOLE: ELEVATION TOP	OE HO! E		1 517	KIE	D: 6/25/10 1240 1 FINISHED: 6/25/10 1540
DEPTH DRILED	INTO R	OCK: n/a		TOTAL CORE REC			0		***************************************
TOTAL DEPTH	OF HOL	E: 55 feet bgs		SIGNATURE OF IN					
Depth in Feet USCS	GRAPHIC	DESCRI	PTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMARKS
0 0] ¹	SANDY GRAVEL FILL, Poor	ly Graded, o	lry,	œ	<u> </u>	0	5	
SP		nonplastic,dense, brown, 7.5	SÝR 4/3	3 .	***************************************				
		SANDY CLAY, medium stiff,	dry, nonplas	tic, dense,	48/60		0		Waste encountered at 3 feet bgs. Cap thickness is 3 feet.
5-MSV	/	brown, 7.5 YR 4/1					0		Trash, glass, plastic, brick, wood and insulation in
+					26/60		0		samples to 45 feet bgs.
		ORGANIC SILTY SAND, me nonplastic,black, 10 YR 2/1	, moist,		_				
10-							0		
10-7					30/60		0		
1							0		
15—							0		
				•	24/60		0		
Msw							0		
20							0		
4							U		
					30/60		0		
25							0		
1				45/60		0			
4							0		
30-								l I	
	nvi	ronmental	Stell E	Environmental 25 East Maii			nc		HOLE NUMBER: WB-1
	7 ,7	nterprises, Inc.		Elverson	, PA				HOLE NUMBER, WD-1
	1			Project # 0	3225				(SHEET 1 OF 2)
	Minimum 1968	The Difference!							(SILET FOR 2)

	DRILL	ING I	_OG	DIVISION	INSTALLATION			1	1		SHEET 2 OF 2
	Depth in Feet	nscs	GRAPHIC	DESCRI	PTION	Recovery (in.)	Box or Sampling No.	PID	Water Level	REM	ARKS
	30 — - -					50/60		0	₩	Groundwater at 31 feet b	gs.
	- 35 <i>-</i>							0			
	_	MSW				24/60		0			
	40 -							0			
s\WB-01.bor	45—					40/60	0			Bottom of waste encount	ered at 45 feet bgs.
Oraft\Boring Log	-	CL		SILTY CLAY, medium stiff,pl with orange brown mottles, 5	5 Y 7/1	25/60		0		Waste thickness is 42 fee	
rables\Phase IN	50 —	sc		CLAYEY SAND, soft,nonplast grey, 5 Y 7/1 SAND, Well Graded, fine gra							
X Landfill\Delive	<u>.</u>	sw						0		Bottom of hole at 55 feet	bgs.
103225 Bellfort T	55 — - -							0			
126G-06-R-0013	- 60 <i>-</i> -										
Fort Worth W91	-										
ects\03200 USACE	- 65 —										
10-12-2010 N:Projects\03200 USACE Fort Worth W9126G-06-R-0013\03225 Belifort TX Landfill\Deliverables\Phase II\Draft\Boring Logs\WB-01.bor	S	tell F		ronmental Interprises, Inc. I The Difference!	Stell Environmenta 25 East Ma Elverso Project #	iin Stree n, PA	rises,	Inc		HOLE NUM	MBER: WB-1 (SHEET 2 OF 2)

DRILL	ING I	_OG	DIVISION	INST	ALLATION						SHEET 1 OF 1
PROJEC1	г: Е	Bellfor	t Landfill	*	SIZE AND TYPE (OF BIT:	8 1/4	" OD I	ISA		***************************************
LOCATIO	N:	Ηοι	ıston, TX		DATUM FOR ELE						
DRILLING	AGEN	CY:	Best Drilling Services		MANUFACTURE					CME Tractor Mounte	
HOLE NU	MBER:		WB-2		TOTAL NO. OF O					N: DISTURBED: 0	UNDISTURBED: 0
NAME OF			Sonny Tabolta		ELEVATION GRO			21 fe		75	
			Vertical		DATE HOLE:	OND WA	11.11.				SHED: 6/25/10 0950
			URDEN:25 feet bgs		ELEVATION TOP	OF HOLE					
			OCK: n/a		TOTAL CORE RE			0			
TOTAL DI	EPTH C	F HOLI	25 feet bgs		SIGNATURE OF I	NSPECTO	DR:				
Depth in Feet	nscs	GRAPHIC	DESCRI	IPTION		Recovery (in.)	Box or Sampling No.	Old	Water Level	REMA	RKS
0			CLAYEY SILT FILL, semipla	stic. mediur	n stiff.drv.	1		0			
4			brown 10YR 4/3								
4	ML							_			
1						45/60		0			
_											
_ T			CLAYEY SILT, plastic, soft,	dry, dark gra	эу,			0			
5			10YR 4/1								
4	ML					FOISO		0			
4						50/60		١			
1						_				Waste encountered at 8 fe	et bas. Can thickness
ĺ			ORGANIC SILTY SAND, me	edium dense	, nonplastic,			0		is 8 feet.	or byo. Oup anomicos
1			moist, black, 10YR 2/1								
10-						48/60		140		Plastic and glass in sample	es to 16 feet bgs.
4						40,00		14.0			
-	MSW										
	-					İ		4.6			
1								2.5			
15											
+		###	OU TV OLAV - ('CC '- (-)		537.774	4				Bottom of waste encounter	ed at 16 feet bgs.
1			SILTY CLAY, stiff, moist, pla	istic, light gr	ay, 5Y //1	60/60		0		Thickness of waste is 8 fee	
7	CL	[/]						0			
1											
20		[/]			•						
+			OU TV OLAY COLA	4 11-1-1-1	7.51/5	4		0	A	Groundwater at 21 feet bgs	S .
			SILTY CLAY, stiff, plastic,we 4/6	et, light brow	n 7.5YR						
	CI	[/]				36/60		0			
1	CL										
+								0		Bottom of hole at 25 feet b	gs.
25		r / l			1000 W 101 V		<u> </u>		l		
4											
_											
1											
1											
30-											
C t	ell	_	. •	Stell	Environmental			Inc			
S.			onmental		25 East Ma		t			HOLE NUMI	BER: WB-2
- 466		1	nterprises, Inc.	Į	Elverson, PA Project # 03225						
	L	3			Project #	03225			1		

ſ	DRILL	ING	LOG	DIVISION	INST	ALLATION					SHEET 1 OF 1	
t	PROJEC			ort Landfill		SIZE AND TYPE	OF BIT:	2 1/	4" OD	Geo	pprobe	
	LOCATIO	N:	H	ouston, TX	····	DATUM FOR ELE						
-	DRILLING	AGE	NCY:	Best Drilling Services		MANUFACTURE						
Г	HOLE N			WB-3		TOTAL NO. OF O				0	EN: IDISTURBED: 0 IUNDISTURBED: 0	_
	NAME OF			Sonny Tabolta		ELEVATION GRO			n/a			
				: Vertical		DATE HOLE:			ST	ARTE	ED: 6/25/10 1055 FINISHED: 6/25/10 1120	
- 1				RBURDEN:10 feet bgs		ELEVATION TOP						
г	TOTAL D			ROCK: n/a		TOTAL CORE RE SIGNATURE OF I			0			
r	TOTALD	EFIN	OF HO	LE: 10 feet bgs		JOIGHATONE OF	Nor LC I	UIV.				\neg
***************************************	Depth in Feet	nscs	GRAPHIC	DESCRIF	PTION		Recovery (in.)	Box or Sampling No.	DID	Water Level	REMARKS	
	0-	SM		SILTY SANDY FILL, loose, dr brown, 10YR 6/6 CLAYEY SILT, stiff, nonplastic		_			0		No trash encountered. No cap or waste	
	-	ML		OLATET SIET, Suit, Hompiasir	c,ury, gray,	1011/0/1	48/48		0		thickness.	***************************************
B-03.bor	5 -	CL		SILTY CLAY, semiplastic, sof material, very dark brown, 10	t, dry, lots o YR 2/2	f organic	36/48		0			
Soring Logs\W	10	CL.				***************************************	12 <i>1</i> 24		0		Bottom of hole at 10 feet bgs.	
10-08-2010 N\Projects\03200 USACE Fort Worth W9128G-06-R-0013\03225 Belifort TX Landfill\Deliverables\Phase I\Draft\Boring Logs\WB-03.bor	15-											
26G-06-R-0013\03225 Bellfort T	20-											
sts/03200 USACE Fort Worth W912	25-											
10-08-2010 N:\Projec		Stell nvironmental nterprises, Inc The Difference!		Stell	Stell Environmental Enterprises, Inc 25 East Main Street Elverson, PA Project # 03225					HOLE NUMBER: WB-3)	

DRILL	ING	LOG	DIVISION	INST	ALLATION						SHEET 1 OF 2
PROJEC [*]			rt Landfill		SIZE AND TYPE O	F BIT:	2 1/4	" OD (Geo	orobe	
LOCATIO	N:	Но	uston, TX		DATUM FOR ELEV					—	
DRILLING	AGEN	ICY:	Best Drilling Services		MANUFACTURER					Tractor Mounted Ge	
HOLE NU	JMBER		WB-4		TOTAL NO. OF OV			_		N: DISTURBED: 0	UNDISTURBED: 0
NAME OF	F DRILL	ER:	Sonny Tabolta		TOTAL NUMBER (ELEVATION GROU			s: C n/a	,		
DIRECTION	ON OF	HOLE:	Vertical		DATE HOLE:	AND AND	1 E.T.		RTF	D: 6/25/10 1210 FIN	IISHED: 6/25/10 130
THICKNE	SS OF	OVER	BURDEN:32 feet bgs		ELEVATION TOP	OF HOLE					
DEPTH D	RILED	INTO F	ROCK: n/a		TOTAL CORE REC	COVERY	:	0			
TOTAL D	EPTH (F HOL	E: 32 feet bgs		SIGNATURE OF IN	SPECTO	OR:				
Depth in Feet	nscs	GRAPHIC	DESCRIP	PTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMA	ARKS
0-	SP		SANDY GRAVEL FILL, Poorly nonplastic, dense, brown, 7.5Y	y Graded, o	dry,			0			
-			SILTY CLAY, semiplastic, med 7.5YR 4/2		dry, brown,	48/48		0	,	Waste encountered at 2 fe is 2 feet.	eet bgs. Cap thickness
5 -						AND THE PERSON NAMED IN COLUMN		0	-		
-						48/48		0		Plastic and glass in sampl	es to 26 feet bgs.
-	MSW							0			
10 –						12/48		0			
	_							0			
15-	MSW		CLAYEY SILT, plastic, soft, dr	ry, gray, 10)YR 4/1	48/48		0			
-			CLAYEY SILT, semiplastic, m grey, 10 YR 4/1	edium stiff	,moist, dark	1-11-		0			
20-						48/48		0	-		
-	MSW					48/48		0			
25								0			
			CLAYEY SILT, semiplastic, m dark gray, 10YR 3/1.	edium stiff	wet, very	48/48	enance and an arrangement of the second	0		Bottom of waste encounte Thickness of waste is 24 f	
30	ML							0			
	ell		ronmental nterprises, Inc.	Stell	tell Environmental Enterprises, Inc 25 East Main Street Elverson, PA				HOLE NUM	BER: WB-4	
		4			Project # 0						/AUT== : == =
			The Difference!		(SHEET 1 OF 2)						

DRILLING	LOG	DIVISION		INSTALLA	TION			·		SHEET 2 OF 2
Depth in Feet USCS	GRAPHIC		DESCRIPT	ΓΙΟΝ		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMARKS
30 - ML						48/48		0		Bottom of hole at 32 feet bgs.
35	II									
40-		·								
45					·					
50 -										
55-										•
60-										
65						######################################				
Stell	T ⁿ	onmental terprises <i>The Diffe</i>	1	Stell Environmental Enterprises, Inc 25 East Main Street Elverson, PA Project # 03225				Inc	HOLE NUMBER: WB-4 (SHEET 2 OF 2)	

DRILL	ING	<u>_OG</u>	DIVISION	INST	ALLATION						SHEET 1 OF 1
PROJEC	T:		rt Landfill		SIZE AND TYPE O				Geo	probe	
LOCATIO			uston, TX		DATUM FOR ELEY					Trooter Manadad O	onrobo
DRILLIN			Best Drilling Services		MANUFACTURER TOTAL NO. OF O					Tractor Mounted Ge	oprobe undisturbed: 0
HOLE N			WB-5		TOTAL NUMBER					IN: IDISTORBED: O	TONDISTURBED: O
NAME O			Sonny Tabolta		ELEVATION GROU			n/a		· · · · · · · · · · · · · · · · · · ·	
			Vertical		DATE HOLE:				ARTE	D: 6/25/10 1500 FI	NISHED: 6/25/10 1713
			BURDEN:24 feet bgs		ELEVATION TOP	OF HOLE	:				
			ROCK: n/a	***************************************	TOTAL CORE REC			0		***************************************	
TOTAL D	EPTH (F HOL	E: 24 feet bgs		SIGNATURE OF IN	ISPECTO	JR:				
Depth in Feet	nscs	GRAPHIC	DESCRII	PTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMA	ARKS
0-	SP		SANDY GRAVEL FILL, Poorl nonplastic,dense, brown, 7.5		dry,			0			
-			SILTY CLAY, stiff, nonplastic brown, 10 YR 4/4	, dry, dark y	yellow	48/48		0		Waste encountered at 2 f is 2 feet.	eet bgs. Cap thickness
5 -	MSW							0		Trash, glass, and plastic i	n samples to 16 feet bo
-			As Above but reddish brown,	5YR 4/4		36/48		0			
_	MSW							0			
10-			SILTY CLAY, medium stiff,pla gray, 2.5Y 3/1	astic, moist	, very dark	24/48		0		Attempted 3 holes but hit	refusal.
-	MSW							0			
15—						36/48		0		Detterned	
			CLAYEY SILT, soft,plastic,we 6/10B	et, bluish gr	ay, Gley 2			0		Bottom of waste encounted Waste thickness is 14 fee	•
- 20 <i>-</i> -	ML					48/48		0			
-								0			
-						48/48		0		Bottom of hole at 24 feet	bgs.
25 — - - - - - -											
	tell		ronmental	Stell	Environmental 25 East Maii Elverson	n Stree		nc		HOLE NUM	IBER: WB-5
		H	nterprises, Inc.		Project # 0						
	100	g 1	The Difference!						- 1		(SHEET 1 OF 1

	DRILL	ING	LOG	DIVISION	INST	ALLATION						SHEET 1 OF 1	
	PROJEC	T;	Bellfo	ort Landfill		SIZE AND TYPE O	E BIT:	2 1/4	" OD	Geo	probe		
	LOCATIO	ON:	Н	ouston, TX		DATUM FOR ELEV							
	DRILLING	G AGEN		Best Drilling Services		MANUFACTURER	S DESIG	NATION	OR DE	RILL:	Tractor Mounted Ge	oprobe	
	HOLE N	JMBER	:	WB-6		TOTAL NO. OF OV				TAKE	N: DISTURBED: 0	UNDISTURBED: 0	
	NAME O	F DRILI	ER:	Sonny Tabolta		TOTAL NUMBER O)			
				Vertical		ELEVATION GROU	JND WA	TER:	_17_f∈				
	THICKNE	SS OF	OVER	BURDEN:20 feet bgs		DATE HOLE:			I ST/	ARTE	D: 6/24/10 1745 FIN	NISHED: 6/24/10 1824	
	ł			ROCK: n/a		ELEVATION TOP (0				
	TOTAL D	EPTH (OF HO	LE: 20 feet bgs		SIGNATURE OF IN							
								l .					
	Depth in Feet	nscs	GRAPHIC	DESCRI	IPTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMA	\RKS	
	0-	SP		SANDY GRAVEL FILL, Poor nonplastic,dense, brown, 7.5		dry,			0				
	-			SILTY CLAY, dry, plastic, so 3/2	oft, dark brow	vn, 10YR	36/48		0		Waste encountered at 2 fe is 2 feet.	et bgs. Cap thickness	
	5								0		Trash, glass, plastic, rubb	er and wood in samples	
06.bor	_	MSW					36/48		0		to 12 feet bgs.	'	
.ogs\WB-	=								0				
t\Boring I	10 —			As Above but moist and dark			36/48						
ise INDra	- -	MSW		rio riboro bat moist ana dan	k gruy ToTTk	711	30/40		0		Bottom of waste encounte	red at 12 feet bas.	
ables\Pha	-			·					0		Waste thickness is 10 fee		
LandfilNDeliverables\Phase INDraft\Boring Logs\WB-06.bor	15 —	ML		CLAYEY SILT, soft,plastic,m 10YR 3/1	noist, very da	ark gray,	36/48		0	***************************************			
	1			SILTY CLAY, plastic,medium	n stiff,wet, gr	ay, 7.5YR			0	V	Groundwater at 17 feet bg	s.	
225 Bellfor	-	CL		5/1			48/48		0		Bottom of hole at 20 feet b	ıgs.	
3-R-0013\03	20						.1						
10-12-2010 N:\Projects\03200 USACE Fort Worth W9126G-06-R-0013\03225 Bellfort TX	- 25 —												
Projects\03200 US	30-	W.F.		1						· 1			
2-2010 N:\F	S	Stell Stell Stell Priving Stell Stel				ll Environmental Enterprises, Inc 25 East Main Street Elverson, PA					HOLE NUM	BER: WB-6	
10-1			L	The Difference!		Project # 03225					(SHEET 1 OF 1)		

				D1 40401			***************************************					
	LING				IN	- 1	LLATION					SHEET 1 OF 1
LOCAT		Re		ort Landfill ouston, TX			SIZE AND TYPE (Ge	oprobe
	NG AGI	=NC		Best Drilling Services			ANUFACTURES				RILL	Tractor Mounted Geoprobe
1	NUMBE		•	WB-7	*		OTAL NO. OF O					
NAME			} :	Sonny Tabolta		- 1	OTAL NUMBER				0	***************************************
DIREC	TION O	F HO	LE:	Vertical			LEVATION GRO DATE HOLE:	UND W	ATER:		et b	
THICK	NESS C	F O	/ER	BURDEN: 10 feet bgs			LEVATION TOP	OF HOL	.E:		LAKI	ED: 6/25/10 0825 FINISHED: 6/25/10 0845
				ROCK: n/a		<u> </u>	OTAL CORE RE	COVER	Y:	0		
TOTAL	DEPTH	OF	HO	LE: 10 feet bgs		s	IGNATURE OF I	NSPECT	OR:	1		3
Depth in Feet	nscs	GRAPHIC		DESCRI	PTION	· · · · · · · · · · · · · · · · · · ·		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMARKS
0	- SP			SANDY GRAVEL FILL, Poor nonplastic,dense, brown, 7.5		l, dry				0		
				CLAYEY SILT, medium stiff, brown, 10YR 3/3	plastic, dr	ry, da	ark	48/48		0		No waste encountered. No cap or waste thickness.
5 ·	ML									0		
35/WB-07.E	<u> </u>			CLAVEY OUT TO A STATE OF A		. 11 .		48/48		0	v	Groundwater at 8 feet bgs
od Lo	ML			CLAYEY SILT, plastic, soft, v brown, 10YR 3/4	wei, dark y	yellov	N	24/24		0		Bottom of hole at 10 feet bgs.
10-10-20-20-20-20-20-20-20-20-20-20-20-20-20	Learn drawn dr											
30-	tell	in v		ronmental nterprises, Inc.	Ste	ell En	ovironmental 25 East Mai Elverson Project # (n Stree		Inc		HOLE NUMBER: WB-7

	DRILL	ING	LOG	DIVISION	INST	ALLATION					SHEET 1 OF 1
-	PROJEC			ort Landfill		SIZE AND TYPE O	DE BIT:	3" C	D She	lby	Tube with HSA
	LOCATIO	ON:	Н	ouston, TX		DATUM FOR ELE					ONE Total Manufad Datem Die
-	DRILLING	3 AGE	NCY:	Best Drilling Services		MANUFACTURES	RS DESIG	SNATIO	NORD	RILL:	CME Truck Mounted Rotary Rig EN: DISTURBED: 0 UNDISTURBED: 0
-	HOLE N	JMBER	t:	CB-1		TOTAL NUMBER				0 0	EN: IDISTORBED. U IUNDISTORBED. U
-	NAME O			Sonny Tabolta		ELEVATION GRO			n/a	-	
				: Vertical		DATE HOLE:			ST	ARTE	ED: 6/22/10 1430 FINISHED: 6/22/10 1500
				RBURDEN: 10 feet bgs		ELEVATION TOP					
	TOTAL D			ROCK: n/a DLE: 10 feet bgs		TOTAL CORE RE SIGNATURE OF I			0		
f	TOTALD	EPIN	OF HC	I 10 leet bgs		piolarione or a	1				
	Depth in Feet	nscs	GRAPHIC	DESCRIP'	TION		Recovery (in.)	Box or Sampling No.	(Water Level	REMARKS
l	De	SN	GR.				& &	Bo	PID	Š	
ſ	0-			CLAYEY SILT, plastic, soft, dry	, verv darl	k gray	24/24		0		
	-	ML		7.5YR 3/1	•		24/24		0		No trash encountered. No cap or waste thickness.
	5-			CLAYEY SILT, plastic, soft, dry orange mottles	, gray 2.5°	Y 5/1 with	24/24		0		
l.bor		ML		orange moules			24/24		0		
Logs/CB-		IVIL					24/24	-	0		Bottom of hole at 10 feet bgs.
oring	10-						24124	<u> </u>	Ľ		Bottom, of Hole at 10 lock age.
t TX Landfil∖Deliverables\Phase I\Draft\Boring Logs\CB-1.bor	- 15 <i>-</i> -										
26G-06-R-0013\03225 Bellfor	20										
10-08-2010 N:Projects\03200 USACE Fort Worth W9126G-06-R-0013\03225 Bellfort	25 — - - -	annered demonstrate de statement description de la construction de la		·							
Projec	30-	1		<u> </u>	Ot . 19	F					I
10-08-2010 N:N		tell	H	ironmental Interprises, Inc. The Difference!	Stell	Environmenta 25 East Ma Elverso Project #	ain Stre n, PA	et	, inc		HOLE NUMBER: CB-1 (SHEET 1 OF 1)

	DRILL	ING	LOG	DIVISION	INST	ALLATION				,	SHEET 1 OF 1
l	PROJEC			ort Landfill		SIZE AND TYPE	OF BIT:	3" C	D Sh	elby	Tube with HSA
	LOCATIO			ouston, TX		DATUM FOR ELE	VATION	SHOW	N:		
	DRILLIN	G AGE	NCY:	Best Drilling Services		MANUFACTURE					
	HOLE N			CB-2		TOTAL NO. OF O				<u>8 TAK</u> 0	EEN: DISTURBED: 0 UNDISTURBED: 0
-	NAME O			Sonny Tabolta		ELEVATION GRO			n/a	<u> </u>	
				: Vertical		DATE HOLE:				ART	ED: 6/22/10 1353 FINISHED: 6/22/10 1425
l				RBURDEN: 10 feet bgs		ELEVATION TOP					
	TOTAL D			ROCK: n/a DLE: 10 feet bgs	·	TOTAL CORE RE SIGNATURE OF I			0		
l	IOIALL		I	To leet bys		JOIOTE OF 1	101 20	<u> </u>	,		
	Depth in Feet	nscs	GRAPHIC	DESCRIF	PTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMARKS
	0 —	 	ПП	CLAYEY SILT, semiplastic, st	iff dry gray	ieh hrown	24/24	· · · · ·	0		
	-	 		10YR 4/2	ini, di y, gidy	ion brown,	24124		J		
	-	ML									No trash encountered. No cap or waste
	-				· —, —, —		24/24		0		thickness.
	-	1		As above but with traces of gr	ravel and gra	ay 10YR					
	5-	ML					24/24		0		
	5-										
δ	-			CLAYEY SILT, plastic,soft,mo	oist, dark yel	low	24/24		0		
B-2.1	-	1		brown, 10YR 4/4.							
gs/C	_	ML									
9 0	_						24/24		0		Bottom of hole at 10 feet bgs.
Sorin	10-		ШШ				<u> </u>	<u> </u>	<u> </u>	<u> </u>	
10-08-2010 N:)Projects/03200 USACE Fort Worth W9126G-06-R-0013/03225 Belifort TX Landfill/Deliverables/Phase II/Draft/Boring Logs/CB-2.bor	15— 										
Projec	30-	tell			<u> </u>	T-1					I
10-08-2010 N:\		tell		ironmental Interprises, Inc. The Difference!	Stell I	Environmental 25 East Ma Elversoi Project #	in Stre n, PA	et	, Inc		HOLE NUMBER: CB-2 (SHEET 1 OF 1)

PROJECT: Bellfort Landfill SIZE AND TYPE OF BIT: 3" OD Shelby Tube with HSA LOCATION: Houston, TX DATUM FOR ELEVATION SHOWN: MANUFACTURERS DESIGNATION OR DRILL CME Truck Mounted Rote HOLE NUMBER: CB-3 NAME OF DRILLER: Sonny Tabolta DIRECTION OF HOLE: Vertical THICKNESS OF OVERBURDEN: 10 feet bgs DEPTH DRILED INTO ROCK: n/a TOTAL DEPTH OF HOLE: 10 feet bgs SIZE AND TYPE OF BIT: 3" OD Shelby Tube with HSA DATUM FOR ELEVATION SHOWN: MANUFACTURERS DESIGNATION OR DRILL CME Truck Mounted Rote TOTAL NUMBER OF CORE BOXES: 0 LEVATION GROUND WATER: n/a DATE HOLE: STARTED: 6/22/10 1315 FINISHER TOTAL CORE RECOVERY: 0 SIGNATURE OF INSPECTOR:	EET 1 OF 1 ary Rig NDISTURBED: 0 0: 6/22/10 1350
PROJECT: Bellfort Landfill LOCATION: Houston, TX DRILLING AGENCY: Best Drilling Services MANUFACTURERS DESIGNATION OR DRILL: CME Truck Mounted Rots HOLE NUMBER: CB-3 NAME OF DRILLER: Sonny Tabolita DIRECTION OF HOLE: Vertical THICKNESS OF OVERBURDEN: 10 feet bgs DEPTH DRILLED INTO ROCK: n/a TOTAL DEPTH OF HOLE: 10 feet bgs SIZE AND TYPE OF BIT: 3" OD Shelby Tube with HSA DATUM FOR ELEVATION SHOWN: MANUFACTURERS DESIGNATION OR DRILL: CME Truck Mounted Rots TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: IDISTURBED: 0 IUR TOTAL NUMBER OF CORE BOXES: 0 ELEVATION GROUND WATER: n/a DATE HOLE: STARTED: 6/22/10 1315 FINISHED ELEVATION TOP OF HOLE: TOTAL CORE RECOVERY: 0 SIGNATURE OF INSPECTOR:	NDISTURBED: 0
MANUFACTURERS DESIGNATION OR DRILL: CME Truck Mounted Rots HOLE NUMBER: CB-3 NAME OF DRILLER: Sonny Tabolta DIRECTION OF HOLE: Vertical THICKNESS OF OVERBURDEN:10 feet bgs DEPTH DRILED INTO ROCK: n/a TOTAL DEPTH OF HOLE: 10 feet bgs SIGNATURE OF INSPECTOR: MANUFACTURERS DESIGNATION OR DRILL: CME Truck Mounted Rots TOTAL NUMBER OF CORE BOXES: 0 ELEVATION GROUND WATER: n/a DATE HOLE: STARTED: 6/22/10 1315 FINISHER TOTAL CORE RECOVERY: 0 SIGNATURE OF INSPECTOR:	NDISTURBED: 0
HOLE NUMBER: CB-3 NAME OF DRILLER: Sonny Tabolta DIRECTION OF HOLE: Vertical THICKNESS OF OVERBURDEN:10 feet bgs DEPTH DRILED INTO ROCK: n/a TOTAL DEPTH OF HOLE: 10 feet bgs TOTAL O. OF OVERBURDEN SAMPLES TAKEN: DISTURBED: 0 lur TOTAL NUMBER OF CORE BOXES: 0 ELEVATION GROUND WATER: n/a DATE HOLE: STARTED: 6/22/10 1315 FINISHED ELEVATION TOP OF HOLE: TOTAL CORE RECOVERY: 0 SIGNATURE OF INSPECTOR:	NDISTURBED: 0
NAME OF DRILLER: SONNY Tabolta DIRECTION OF HOLE: Vertical THICKNESS OF OVERBURDEN: 10 feet bgs DEPTH DRILED INTO ROCK: n/a TOTAL DEPTH OF HOLE: 10 feet bgs TOTAL DEPTH OF HOLE: 10 feet bgs SIGNATURE OF INSPECTOR:	
NAME OF DRILLER: Sonny Labolta DIRECTION OF HOLE: Vertical THICKNESS OF OVERBURDEN: 10 feet bgs DEPTH DRILED INTO ROCK: n/a TOTAL DEPTH OF HOLE: 10 feet bgs SIGNATURE OF INSPECTOR:	o: 6/22/10 1350
DATE HOLE: STARTED: 6/22/10 1315 FINISHET THICKNESS OF OVERBURDEN:10 feet bgs DEPTH DRILED INTO ROCK: n/a TOTAL DEPTH OF HOLE: 10 feet bgs SIGNATURE OF INSPECTOR:	o: 6/22/10 1350
DEPTH DRILED INTO ROCK: n/a TOTAL CORE RECOVERY: TOTAL DEPTH OF HOLE: 10 feet bgs SIGNATURE OF INSPECTOR:	
TOTAL DEPTH OF HOLE: 10 feet bgs SIGNATURE OF INSPECTOR:	
o Z	
Depth in Feet USCS GRAPHIC Recovery (in.) Box or Sampling PID Water Level	}
O CLAYEY SILT, plastic, soft, dry, brown, 10YR 4/3 24/24 0	
CLAYEY SILT, plastic, stiff, dry, very dark brown, 10YR 2/2	r waste
5 — ML 0 24/24 0	
24/24 0	
CLAYEY SILT, semiplastic, stiff, dry, brown.	
ML 10YR 4/3 24/24 0 Bottom of hole at 10 feet bgs.	****
15—	
20-	
1	
25-	
30-	
	 R: CB-3

DRILL					ISIOI	N				INST	ALLATION					SHEET 1 OF 1
PROJEC		Bellf						***************************************			SIZE AND TYPI DATUM FOR E				arks	Below
LOCATIO				on, T			vices				MANUFACTUR				ORILL:	CME Truck Mounted Rotary Rig
DRILLIN HOLE N				<u>∌s≀ ⊅</u> B-4	nung	Serv	vices				TOTAL NO. OF					
NAME O					Tabo	ito.					TOTAL NUMBE				0	
DIRECTI						<u>ma</u>					ELEVATION GR	ROUND W	ATER:		et b	
THICKN						at has					DATE HOLE:			L_s	TART	ED: 6/22/10 1130 FINISHED: 6/22/10 122
DEPTH I						r bys	2				ELEVATION TO			0		
TOTAL D					feet l	has					TOTAL CORE F SIGNATURE OF				<u>'</u>	
										11 11 11 11 11 11			or Sampling No.			
Depth in Feet	nscs	GRAPHIC					DES	CRII	PTIO	N		Recovery (in.)	Box or Sam	PID	Water Level	REMARKS
0-	 		SIL	TYC	LAY	, sem	niplast	ic, sti	ff, dry,	dark r	eddish	24/24		0	Τ	2" OD Split Spoon 2' in Length with HSA.
-	CL	V/			SYR 3									1		Switched to a 3" Shelby Tube, 2' in Length with
	CL	//														HSA.
_	<u> </u>		_									24/24		0		No trash encountered. No cap or waste thickness.
		\vee	SIL	TY C	LAY,	non	plastic YR 3/	c, ver	y stiff,	dry, ve	ery dark			1		and an analysis of the same of
_	CL		yıa	yısıı	JI OWI	11, 10	11 3/	2				24/24		0		
5-		V/l												1		
-		fffil	CI	AVE	/ SII	T no	nnlas	tic eti	ff dry	very d	ark gray	-				
	ŀ		10	'R 3/	1	1, 110	iipias	110,511	n, ury,	very	ain glay	24/24		0		
	ML															***
														1	_	
-	SM		SIL	TY S	AND	, well	Sorte	d. fin	e grair	ned. no	onplastic,	24/24		0	-	Groundwater at 9 feet bgs. Bottom of hole at 10 feet bgs.
10-		FE-E-1	sof	, we	, dari	k gra	y, 10\	(R 4/	1			<i></i>	L	1		
15 — 20 — 25 —																
30- S	tell	invi	nt	erp	ris	es,	Inc.			Stell E	Environment 25 East M Elverso Project i	ain Stre		, Inc	91.10 · · · · · · · · · · · · · · · · · · ·	HOLE NUMBER: CB-4

DRIL	~~~~~~			INST	ALLATION					SHEET 1 OF 1
PROJE			ort Landfill		SIZE AND TYPE O				be	
DRILLIN			ouston, TX Best Drilling Services		MANUFACTURE				RILL	Geoprobe Tractor Mounted
HOLE N			CB-5		TOTAL NO. OF O	VERBUE	RDEN S	AMPLES	S.TAK	EN: DISTURBED: 0 UNDISTURBED: 0
NAME C			Sonny Tabolta		TOTAL NUMBER				0	
DIRECT	TION OF	HOLE	: Vertical		ELEVATION GRO DATE HOLE:	UND W	ATER:	n/a	ARTE	ED: 6/25/10 1035 FINISHED: 6/25/10 1055
			RBURDEN:10 feet bgs		ELEVATION TOP	OF HOL	E·		73111	
ı			ROCK: n/a		TOTAL CORE RE	COVER	<u>(:</u>	0		
TOTAL	DEPTH	OF HO	DLE: 10 feet bgs		SIGNATURE OF I	NSPECT	OR:			
Depth in Feet	nscs	GRAPHIC	DESCRIF	PTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMARKS
0-		V	SILTY CLAY, semiplastic, stif	ff, dry, pale b	orown,	T		0	Π	
	CL		10YR 6/3		·	48/48		0		No trash encountered. No cap or waste thickness.
	1							0		
5- 5-	ML		CLAYEY SILT, semiplastic, m brown 10YR 3/3 with gray mo		dry, dark	48/48		0		
Boring Logs/C	ML		CLAYEY SILT, plastic, soft, w	vet, black, 10	OYR 2/1	24/24		0		Bottom of hole at 10 feet bgs.
TX Landfill/Deliverables/Phase II/Draft(Boring Logs/CB-5.bor CB										
20 –										
10-08-2010 N:VProjects\03200 USACE Fort Worth W9126G-06-R-0013\03225 Bellfort	de de la company									
10-08-2010 N:Project	tell	4	ironmental Interprises, Inc. The Difference!	Stell	Environmental 25 East Ma Elversoi Project #	iin Stre n, PA	et	, Inc	anaupee	HOLE NUMBER: CB-5 (SHEET 1 OF 1)

DRILI	LING	LOC	3	DIVIS	ION			INST	ALLATION					SHEET 1 OF 1
PROJEC				andfill					SIZE AND TYPE			}eopr	be	
LOCATI				ton, TX			· Total * · · · · · · · · · · · · · · · · · ·		DATUM FOR EL					Geoprobe Tractor Mounted
DRILLIN				est Dril	ing Se	rvices			MANUFACTURE TOTAL NO. OF C					
NAME C				B-6					TOTAL NUMBER				0	TOTOTOTOLES G
DIRECT				onny Ta	abolta				ELEVATION GRO	OUND W	ATER:		et b	
				ELLICAL RDEN:10	feet he	16			DATE HOLE:			S.	TART	ED: 6/25/10 1420 FINISHED: 6/25/10 1515
DEPTH					seer or	13			ELEVATION TOP			0		
TOTAL I					et bas				TOTAL CORE RI SIGNATURE OF			U		
Depth in Feet	USCS	GRAPHIC				DESC	RIPTIO	ON		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMARKS
0-				TY CL YR 4/3	AY, se	miplastic	, mediun	n stiff, d	ry, brown,			0		Hit refusal on first two attempts.
-	CL									48/48		0		No trash encountered. No cap or waste thickness.
5 - -										36/48		0	V	Groundwater at 7 feet bgs.
- 10	ML		CL bro	AYEY S wn, 10°	SILT, p YR 4/2	lastic, so	ft, wet, d	lark gra	yish	24/24		0		Bottom of hole at 10 feet bgs.
15-					·									
20 —														
25 -														
30-										·····	7/=			
S	tell	nvironmental nterprises, Inc.						Stell E	Environmental 25 East Ma Elversol Project #	in Stre n, PA		Inc		HOLE NUMBER: CB-6 (SHEET 1 OF 1)
	_			. x 116 1	اعرزيد	encei								(OTTELL FOR 1)

	DRILL	ING I	LOG	DIVISION	INST	ALLATION					SHEET 1 OF 1	
	PROJEC	T: [rt Landfill		SIZE AND TYPE O				е		
	LOCATIO			uston, TX		DATUM FOR ELEV					Geoprobe Tractor Mounted	
	DRILLING			Best Drilling Services CB-7		MANUFACTURERS TOTAL NO. OF OV						0
l	NAME O			Sonny Tabolta		TOTAL NUMBER C						
				Vertical		ELEVATION GROU	JND WA	TER:	n/a		0/04/40 4445	
				BURDEN:10 feet bgs		DATE HOLE: ELEVATION TOP O	OF HOLE		I STA	RTE	D: 6/24/10 1415 FINISHED: 6/24/10 15:	<u> 30</u>
	DEPTH E	DRILED	INTO R	ROCK: n/a		TOTAL CORE REC	OVERY		0			
ŀ	TOTAL D	EPTH C	F HOL	E: 10 feet bgs		SIGNATURE OF IN	ISPECTO	PR:				
	Depth in Feet	nscs	GRAPHIC	DESCRI	IPTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMARKS	
Ī	0 —			SILTY CLAY, semiplastic, m	nedium stiff, o	dry, brown,			0			
	-	CL		10YR 4/3								
	-	ļ		0	-4		36/48		0			
	-	CL		Small layor of crushed white SILTY CLAY, semiplastic, m		dry brown	1					
į	_			\10YR 4/3			1		4.8		Trash, plastic, wood, and cloth encountered at feet bgs. Cap thickness is 4 feet.	4
	5	1		SILTY CLAY, plastic, soft, di 4/3	ry, reddish b	rown, 5YR						
por	-			4/3			36/48		2.0			ŀ
3B-7.	-	MSW										
)\s6o	-											
ring L	- 10 <i>-</i> -						24/24		1.0		Bottom of hole at 10 feet bgs. Trash at bottom hole.	of
10-12-2010 N:Projects\03200 USACE Fort Worth W9126G-06-R-0013\03225 Bellfort TX Landfill\Deliverables\Phase II\Draft\Boring Logs\CB-7.bor	15—											
N:\Pro		tell			Stell E	Environmental E			nc			
2010		4		ronmental nterprises, Inc.		25 East Mair Elverson,		t			HOLE NUMBER: CB-7	
0-12-;			H'			Project # 0					(QUEET 4 OF	1\
-1			B	The Difference!	1					- 1	(SHEET 1 OF	1)

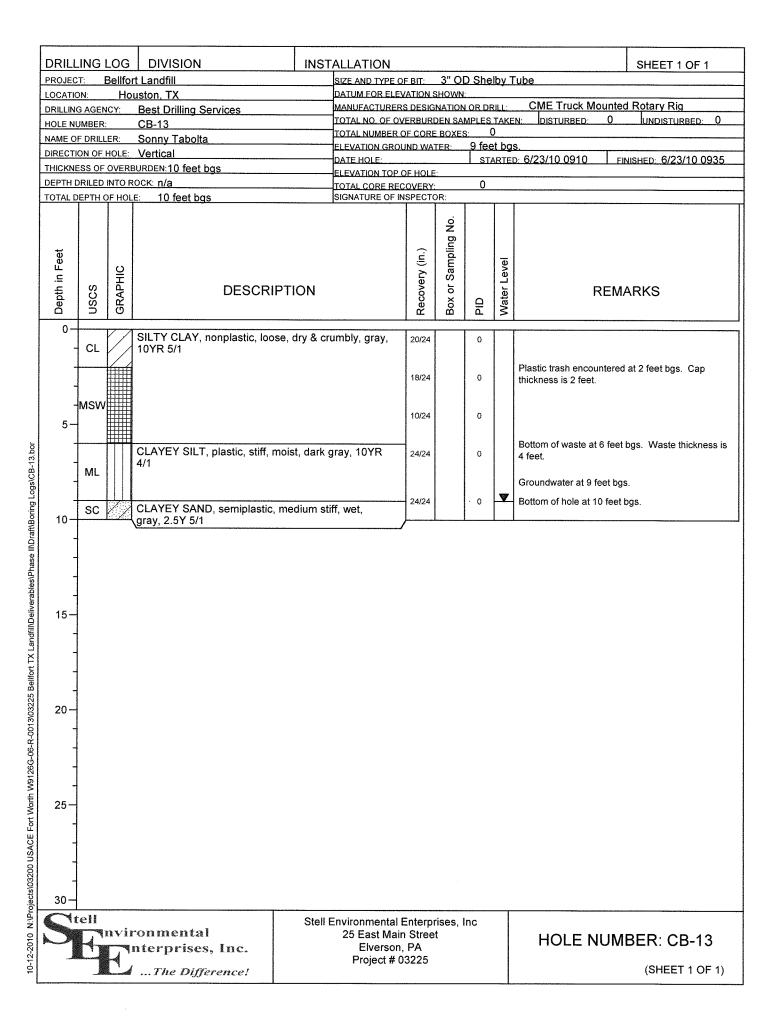
	DRILL	ING I	_OG	DIVISION	INST	ALLATION					SHEET 1 OF 1	
	PROJEC			rt Landfill		SIZE AND TYPE O	F BIT:	3" O[) She	lby T		
	LOCATIO	ON:	Ho	uston, TX		DATUM FOR ELEV						
	DRILLING	G AGEN	CY:	Best Drilling Services		MANUFACTURERS					CME Truck Mounted Rotary Rig	
	HOLE N	JMBER:		CB-8		TOTAL NO. OF OV					n: DISTURBED: 0 UNDISTURBED: (0
	NAME O			Sonny Tabolta		ELEVATION GROU			n/a	·		
}				Vertical		DATE HOLE:				ARTE	D: 6/23/10 1230 FINISHED: 6/23/10 125	50
ŀ				BURDEN:10 feet bgs		ELEVATION TOP O	OF HOLE	:				
ŀ	TOTAL D			ROCK: n/a .E: 10 feet bgs		TOTAL CORE REC SIGNATURE OF IN			0		The state of the s	
ŀ	TOTALL	I	HOL	E. 10 leet bgs		SIGNATURE OF IN	SFECTO			T		
	Depth in Feet	nscs	GRAPHIC	DESCRI	PTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMARKS	
	0-	SM		SILTY SAND, fine grained, w dry, pale brown 10YR 6/3	ell sorted, r	nedium stiff,	12/24		0			
	-			As above 100 f	- 1		18/24		0			
į	_	SM		As above with traces of grave							Trash, glass, and tar/charcoal odor encountered	nt at
	5-			CLAYEY SILT, plastic, mediu	ım stiff, dry,	, 10YR 2/1	20/24		0		4 feet bgs. Cap thickness is 4 feet.	
ò	_	MSW					20/24		0			
8-8	-											I
gs/C	-										No trash encountered at 9 feet bgs. Waste	
9 6				OLANTY OUT - I - 4: 6:		40)/D	24/24		0		thickness is 5 feet. Bottom of hole at 10 feet bgs.	
30rin	10-	ML	Ш	CLAYEY SILT, plastic, soft, r \4/1	noist, dark (gray 10YR					Dottom of hole at 10 feet bgs.	
10-12-2010 N:\Projects\03200 USACE Fort Worth W9126G-06-R-0013\03225 Bellfort TX Landfil\Deliverables\Phase I\\Draft\Boring Logs\CB-8.bor	15—											
!:\Proje		tell			Stell F	Environmental E	Entero	ises I	nc	T		
10				ronmental	"	25 East Mair	Stree				HOLE NUMBER: CB-8	
2-20				nterprises, Inc.		Elverson,					TOLL NOWBLIN. OB-0	
10-1			L	The Difference!		Project # 0	JZZ3				(SHEET 1 OF	1)
L				· · · · · · · · · · · · · · · · · · ·								-

	DRILL	ING	LOG	;	DIVIS	1012	N			INST	ALLATION							SHEE	T 1 OF 1
	PROJEC				andfil						SIZE AND TYPE	OF BIT:	2" Ol	D Split	Spc	oon			
L	LOCATIO	ON:	Ho	oust	on, T	<u>X</u>					DATUM FOR ELI								
-	DRILLING	G AGE	NCY:			illing	Serv	ices								CME Truck Mou	<u>inted l</u> 0		
	HOLE N				B-09			·····			1					N: DISTURBED:	<u>U</u>	LUNDIS	STURBED: 0
	NAME O				-		lta				1			n/a				***************************************	
г	DIRECTI										DATE HOLE:			STA	ARTE	o: 6/24/10 1720	FINE	SHED: 6	6/24/10 1735
							et bgs				I .								
- 1	DEPTH D					Drilling Services MANUFACTURER TOTAL NO. OF OVER TOTAL NUMBER OF ELEVATION GROUD DATE HOLE: 10 feet bgs DESCRIPTION CLAY, traces of gravel, nonplastic, medium lry, reddish brown 5YR 4/3 CLAY, traces of gravel, plastic, medium stiff, light brown, 5Y 6/1 EY SILT, plastic, medium stiff, moist, black,								0					*********
 	TOTALL	1	I	<u>T.</u>	10	ICCL	uys				DIGITAT GIVE OF	11401 2014	T.						
	Depth in Feet	nscs	GRAPHIC					DESCI	RIPTIO)N		Recovery (in.)	Box or Sampling No.	PID	Water Level	RI	Ξ Μ Α	RKS	
	0 —		Y/							plastic	c, medium	14/24		0	Γ				
	-	CL	Y/	1 st	iff, dry	, red	ldish l	brown 5Y	YR 4/3										
	-		Y/	1								46/04							
	_	ļ	$Y_{/}$	4	1. T.V. (T t		:	16/24		0					
Ì	_		Y/	1 51 m	cist li	JLAY iaht t	r, trac orown	ces of gra	avei, pias	stic, m	eaium stiπ,								
	5 —		Y/	1'''	0,01, 11	9 ~	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, 0 1 0, 1				19/24		0					
	5	CL	Y/	1															
ρ	-		Y/	1								18/24		0					
9-9.	-		Y/	1												T	.:1	4:	
Is/CE				1	A 3 / PP 3							4				Trash, plastic, and ra feet bgs. Cap thickne			ountered at 8
Log	_	мѕѡ	,##	10	LAYE YR 2	Y SIL 11	_I , pla	astic, me	edium stif	t, moi	st, black,	4/24		0		Bottom of hole at 10			h at hottom of
oring	10 —] '`	/ 1 1 \ Z/							7,27				hole.	icet by	js. Has	ar at bottom or
aft/B	10-																-		
Ĭ	-																		
ase	-																		
s/Ph																			
apple	_																		
eliver	15-																		
ğ	13																		
andf	-																		
XI	-																		
fort	_																		
Bell																			
3225	20																		
13/03	20 —																		
9	-																		
96-F	-																		
56G-	-																		
V912	_																		
£	25																		
Wo.	25-																		
For	-																		
ACE	-																		
O.S.	4																		
3200	e-5																		
ts/0]																		
rojec	30 –				-														
10-12-2010 N:Projects\03200 USACE Fort Worth W9126G-06-R-0013\03225 Bellfort TX Landfil\Deliverables\Phase I\\Draft\Boring Logs\CB-9.bor	C1	ell					_			Stell E				Inc					
99								127					t			HOLE N	UMI	BER:	CB-9
12-2				grrt	erp	ris	es, l	inc.								· ·			
9				d	.The	. Dij	ffere	ence!										(SHE	EET 1 OF 1)

	DRILI	ING	LOG	DIVISION	INST	ALLATION						SHEET 1 OF 1
	PROJEC			rt Landfill		SIZE AND TYPE OF	F.BIT:	3" OI) She	lby 7	ube	
	LOCATION			uston, TX		DATUM FOR ELEV						
	DRILLIN	G AGEN	ICY:	Best Drilling Services	***************************************	MANUFACTURERS					CME Truck Mounte	
	HOLE N	UMBER	<u> </u>	CB-10		TOTAL NO. OF OV					N: DISTURBED: 0	UNDISTURBED: 0
	NAME C	F DRILL	ER:	Sonny Tabolta		TOTAL NUMBER C			6 fee		e	
				Vertical		DATE HOLE:	NAC ANA	EK.				NISHED: 6/22/10 1100
				BURDEN:10 feet bgs		ELEVATION TOP O	E HOLE					7.11.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2
				OCK: n/a		TOTAL CORE REC			0			
	TOTAL I	DEPTH (OF HOL	E: 10 feet bgs		SIGNATURE OF IN	SPECTO	DR:		Ι		***************************************
013/03225 Belifort TX Landfill/Deliverables/Phase II/Draft/Boring Logs/CB-10.bor	TOTAL II TOTAL	SOSO MSW MSW	GRAPHIC	DESCR SANDY CLAY FILL, plastic, 7.5YR 4/1 CLAYEY SILT, semiplastic, 4/3 CLAYEY SILT, plastic, soft, 10YR 3/1	medium stiff	wn, 7.5YR	8/24 20/24 14/24 16/24	Box or Sampling No.	0 0 0	■ Water Level	Mixed Plastic and glass e the entire sample. No ca	p present.
10-12-2010 N:Projects)03200 USACE Fort Worth W9126G-06-R-0013)03225 Bellfort TX L	25-	tell		ronmental nterprises, Inc.	Stell I	Environmental E 25 East Mair Elverson, Project # 0	Stree PA		Inc		HOLE NUM	BER: CB-10
5				The Difference!		- 						(SHEET 1 OF 1)

	ING			DIVISI	ON			INS	TALLATION SIZE AND TYPE	OF DIT.	3" (DD Sh	alby	Tuba	SHEET 1 OF 1
<u>PROJEC</u> LOCATK				andfill on, TX					DATUM FOR E				BIDY	rube	
DRILLIN				est Drilli	na Se	rvices			MANUFACTUR				RILL:	CME Truck Mou	inted Rotary Rig
HOLE N				B-11	119 00	111000	····		TOTAL NO. OF	OVERBUE	DEN S			EN: DISTURBED:	O UNDISTURBED: 0
NAME O				onny Ta	bolta				TOTAL NUMBE				0		
DIRECTI									ELEVATION GE	OUND WA	TER:	n/a		D: 6/22/10 1515	FINISHED: 6/22/10 155
				DEN:10 1	eet bo	ıs			DATE HOLE: ELEVATION TO	P OF HOL	E-	1.8	IARII	D: 0/22/10 1313	1 FINISHED: 0/22/10 155
DEPTH (DRILED	INTO	ROC	K: n/a					TOTAL CORE F			0			
TOTAL D	EPTH (OF H	OLE:	10 fee	et bas				SIGNATURE OF	INSPECT	OR:	,			
Depth in Feet	nscs	GRAPHIC				DES	CRIF	PTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	RE	MARKS
0 —		П	CL	AYEY S	IIT s	eminle	istic m	edium stif	f, dry, very	20/24		0	I		
-			da	k gray,	10YR	3/1			.,,,,	20124		١			
-	ML									24/24		0			nd plastic encountered Cap thickness is 2 feet and oot.
-										24/24		0			
5 –		$\dagger \dagger$	CL	AYEY S	ILT, s	emipla	ıstic, m	edium stif	f, moist, gray						
-				n orange					, , ,	24/24		0			
-										24/24		0			
_	ML														
										40/04		1		Dattam of halo of 40 f	aat haa
10-										18/24		0		Bottom of hole at 10 f	eet bys.
15															
20 — 															
25 —															
	tell	nv		nmei				Stel	II Environment 25 East M			, Inc		HOLENI	IMPED, OD 44
	4	7		erpr					Elvers Project	on, PA	-			HOLE N	UMBER: CB-11

PROJECT: Reflort Landfell Suza Austrace or art 3" O'O Shally Tube		DRILL	ING	LO	G	DIVISION	INST	ALLATION						SHEET 1 OF 1		
MANUEL CHIEF SET PRINCE SERVICES MANUEL PORTRAINED ACRONS CB-12 MANUEL CHIEF SET PRINCE SERVICES MANUEL CHIEF SET PRINCE SET PRINCE SERVICES MANUEL CHIEF SET PRINCE SET PR		PROJEC	T:	Bel	lfo	rt Landfill		SIZE AND TYPE (OF BIT:	3" C	D Sh	elby	Tube			
Section Sect		LOCATIO	ON:		Но	uston, TX		DATUM FOR ELEVATION SHOWN:								
MALL CLAYEY SILT, permipliestic, medium stiff, dry, gray 100 May 100 M		DRILLING	G AGE	NCY	:	Best Drilling Services										
Levand Description Descr	ļ							B .					EN: IDISTURBED: U	IUNDISTURBED: U		
DESCRIPTION OF HOLE VENTERS AT PRINCIPLE STRATED S. C.	ł					•							18.			
DESCRIPTION O ML CLAYEYSILT, plastic, medium stiff, diry, gray 10 ML CLAYEYSILT, plastic, medium stiff, wet, brown 7.5YR 4/3 with gray 7.5YR 5/1 mottles. Stelf Environmental Enterprises, inc 22 East Main Street Everson, Pa TOTAL DEPTH OF HOLE: 10 feet bgs SIGNATURE OF INSECTORS. REMARKS O Trash, metal peloes, glass, and wood encountered at 1 feet bgs. Cap thickness is 1 foot. Trash, metal peloes, glass, and wood encountered at 1 feet bgs. Cap thickness is 1 feet bgs. Bottom of hole at 10 feet bgs. Bottom of hole at 10 feet bgs. HOLE NUMBER: CB-12 Everson, Pa Trash, metal peloes, glass, and wood encountered at 1 feet bgs. Bottom of hole at 10 feet bgs. Bottom of hole at 10 feet bgs. HOLE NUMBER: CB-12 Everson, Pa Trash, metal peloes, glass, and wood encountered at 1 feet bgs. Bottom of hole at 10 feet bgs. Bottom of hole at 10 feet bgs. HOLE NUMBER: CB-12 Everson, Pa Trash, metal peloes, glass, and wood encountered at 1 feet bgs. Bottom of hole at 10 feet bgs. HOLE NUMBER: CB-12 Everson, Pa Trash, metal peloes, glass, and wood encountered at 1 feet bgs. Bottom of hole at 10 feet bgs. HOLE NUMBER: CB-12	ŀ							1			s	TARTI	D: 6/22/10 1630 FIN	NISHED: 6/22/10 1700		
TOTAL DEPTH OF HOLE: 10 feet bgs. SIGMATURE OF NAPECTOR. 10	ŀ							ELEVATION TOP OF HOLE:								
DESCRIPTION DESCR	İ							TO THE OWNER AND THE TENT								
DESCRIPTION DESCR	Ì		1	Ĭ	Ť	10 1000 1000										
DESCRIPTION DESCR					ı					No.						
Trash, metal paices, glass, and wood encountered at 1 feet bgs. Cap thickness is 1 foot at 10 feet bgs. ML	1									ng						
Trash, metal paices, glass, and wood encountered at 1 feet bgs. Cap thickness is 1 foot at 10 feet bgs. ML	l	eet			ŀ				ü	npli		-				
Trash, metal paices, glass, and wood encountered at 1 feet bgs. Cap thickness is 1 foot at 10 feet bgs. ML		드		일					رخ ا	Sar		ě				
Trash, metal paices, glass, and wood encountered at 1 feet bgs. Cap thickness is 1 foot at 10 feet bgs. ML	1	ŧ	SS	占		DESCRIP	PTION	or \$			er L	REMA	RKS			
Trash, metal paices, glass, and wood encountered at 1 feet bgs. Cap thickness is 1 foot at 10 feet bgs. ML)eb	SC	%					Še	ŏ	Ö	Vate				
ML CLAYEY Sil.T. semiplastic, medium stiff, dry, gray 19024 17 Trash, metal polices, glass, and wood encountered at 1 feet bgs. Cap thickness is 1 foot at 1 feet bgs. Cap thickness is 1 feet bgs. Cap thickness is 1 feet bgs. Cap thickness is 2 4 feet. Groundwater at 6 feet bgs. ML CLAYEY Sil.T. plastic, medium stiff, wet, brown 7.5YR 4/3 with gray 7.5YR 5/1 mottles. Delication of waste at 5 feet bgs. Waste thickness is 4 feet. Groundwater at 6 feet bgs. Bottom of hole at 10 feet bgs. Bottom of hole at 10 feet bgs. Stell Environmental Enterprises, Inc. 25 East Main Street Elverson, PA Project # 60 80225 HOLE NUMBER: CB-12 Project # 60 80255	-		-							ш	<u> </u>	>				
AND AND AND AND AND AND AND AND AND AND		0-	ML	Ш	\prod	CLAYEY SILT, semiplastic, m	edium stiff,	dry, gray	18/24		0					
AND SWAN AND		-			\parallel	10YR 5/1 with red 7.5YR 4/3							Trash, metal peices, glass,	and wood encountered		
MIL CLAYEY SILT, plastic, medium stiff, wet, brown 7.5YR 4/3 with gray 7.5YR 5/1 mottles. 10 24/24 0 24/24 0 Bottom of waste at 5 feet bgs. Waste thickness is 4 feet. Groundwater at 6 feet bgs. Bottom of hole at 10		_	1	ᇤ									at 1 feet bgs. Cap thicknes	IS IS 1 100t.		
Bottom of waste at 5 feet bgs. Waste thickness is MIL CLAYEY SILT, plastic, medium stiff, wet, brown 7,5YR 4/3 with gray 7,5YR 5/1 mottles. 24/24 0 0 Bottom of hole at 10 feet bgs.		-	MSW						24/24		0					
Stell Environmental Enterprises, Inc. Stell Environmental Enterprises, Inc. Stell Environmental Enterprises, Inc. Police of Waste at 5 feet bgs. Waste thickness is Stell Environmental Enterprises, Inc. Stell Environmental Enterprises, Inc. Police of Waste at 5 feet bgs. Waste thickness is Stell Environmental Enterprises, Inc. Stell Environmental E		_														
ML CLAYEY SILT. plastic, medium stiff, wet, brown 7.5YR 4/3 with gray 7.5YR 5/1 mottles. CLAYEY SILT. plastic, medium stiff, wet, brown 7.5YR 4/3 with gray 7.5YR 5/1 mottles. CLAYEY SILT. plastic, medium stiff, wet, brown 7.5YR 4/3 with gray 7.5YR 5/1 mottles. Delta delta		-							24/24		0		.			
ML CLAYEY SILT, plastic, medium stiff, wet, brown 7.5YR 4/3 with gray 7.5YR 5/1 mottles. 20- 20- 30- Stell Environmental Enterprises, Inc. 25 East Main Street Elverson, PA Project # 03225 HOLE NUMBER: CB-12 Project # 03225		5 –		Ш	П							_		gs. Waste thickness is		
20- 25- 30- 30- 30- 30- 30- 30- 30- 30- 30- 30	ρ	-	MI						24/24		0	Y				
20- 25- 30- 30- 30- 30- 30- 30- 30- 30- 30- 30	3-12.	-	1012						2-17/2-1		J					
20- 25- 30- 30- 30- 30- 30- 30- 30- 30- 30- 30	SICE		ļ	\mathbb{H}	4											
20- 25- 30- 30- 30- 30- 30- 30- 30- 30- 30- 30	Log	_	N/I					brown	24/24		0		Bottom of hole at 10 feet ho	10		
20- 25- 30- 30- 30- 30- 30- 30- 30- 30- 30- 30	oring	40	IVIL			7.511(4/5 With gray 7.511(5/1	i iiiotties.		24124		Ŭ		bottom of note at 10 feet by	<i>j</i> s.		
Stell Environmental Enterprises, Inc. Stell Environmental Enterprises, Inc. 25 East Main Street Elverson, PA Project # 03225 (SHEET 1 OF 1)	0 USACE Fort Worth W9126G-06-R-0013\03225 Belifort TX Landfil\Deliverables\Phase II\	- - 20 — - -														
SHEET 1 OF 1)	12-2010 N:\Projects\032\			(n)			Stell I	25 East Main Street Elverson, PA					HOLE NUM	BER: CB-12		
· · · · · · · · · · · · · · · · · · ·	9				1	The Difference!		. Tojost ii dozed					(SHEET 1 OF 1)			



DRILL	ING I	OG	DIVISION	INST	ALLATION						SHEET 1 OF 1			
PROJEC*			rt Landfill	1 11101	1	SIZE AND TYPE OF BIT: 3" OD Shelby Tube								
LOCATIO			ouston, TX		DATUM FOR ELEVATION SHOWN:									
DRILLING	3 AGEN	ICY:	Best Drilling Services		MANUFACTURER					CME Truck Mounted				
HOLE NU	JMBER:		CB-14		TOTAL NO. OF OV TOTAL NUMBER (TAKE)	N: DISTURBED: 0	UNDISTURBED: 0			
NAME OF			Sonny Tabolta		ELEVATION GROU			n/a	<u>, </u>					
			Vertical		DATE HOLE:	200 1111			ARTE	D: 6/23/10 0815 FIN	ISHED: 6/23/10 0845			
			BURDEN: 10 feet bgs	ELEVATION TOP (
			ROCK: n/a	TOTAL CORE REC			0							
TOTAL D	EPTH C	OF HOI	E: 10 feet bgs	SIGNATURE OF IN	ISPECTO)R:		1						
Depth in Feet	nscs	GRAPHIC	DESCRIP	TION		Recovery (in.)	Box or Sampling No.	ald	Water Level	REM <i>A</i>	\RKS			
0-	ML		CLAYEY SILT, semiplastic, me 10YR 4/3	edium stiff	dry, brown,	12/24		0						
	CL		SILTY CLAY, semiplastic, soft dark gray, 10YR 3/1	, dry & cru	ımbly, very	12/24		0						
5-	ML		CLAYEY SILT, soft, plastic, dr 4/1	y, dark gra	ay, 10YR	20/24		0						
-	MSW					20/24		0		Plastic trash encountered thickness is 6 feet.	at 6 feet bgs. Cap			
-	ML		CLAYEY SILT, traces of grave dark grayish brown, 10YR 4/2	l, soft, pla	stic, dry,	24/24		0		Bottom of waste at 8 feet to 2 feet. Bottom of hole at 10 feet to				
10		<u> </u>				.•			1					
15— -														
20-														
20-														
30-	tell			Stell	I Environmental Enterprises, Inc									
			ronmental	2.011	25 East Mai	n Stree		=		HOLE NUM	BER: CR-14			
		77	nterprises, Inc.		Elverson					LICEL MOIN	JLN. OD-14			
		M.	The Difference!		Project # 03225					(SHEET 1 OF 1)				
L			· · · · · · · · · · · · · · · · · · ·						1					

DRILL	ING I	_OG	DIVISION	INST	ALLATION						SHEET 1 OF 1	
PROJEC			t Landfill	1	ALLATION SHEET 1 OF 1							
LOCATIO	N:	Ho	uston, TX		DATUM FOR ELE							
DRILLING AGENCY: Best Drilling Services HOLE NUMBER: CB-15 NAME OF DRILLER: Sonny Tabolta					MANUFACTURER					CME Truck Mounted		
					TOTAL NO. OF O					N: DISTURBED: 0	lundisturbed: 0	
					TOTAL NUMBER			n/a			2*	
DIRECTION	ON OF I	HOLE:	Vertical	DATE HOLE:	UND WA	LER:	_	ARTF	o: 6/24/10 1030 FIN	ISHED: 6/24/10 113		
THICKNE	SS OF	OVERE	BURDEN: 10 feet bgs		ELEVATION TOP	OF HOLE				L I I I I I I I I I I I I I I I I I I I	JULIE SIETLIS IIIS	
			оск: n/a		TOTAL CORE RE	COVERY:		0				
TOTAL D	EPTH C	F HOL	E: 10 feet bgs		SIGNATURE OF I	VSPECTO	PR:					
Depth in Feet	nscs	GRAPHIC	DESCRI	PTION		Recovery (in.)	Box or Sampling No.	ald	Water Level	REM <i>A</i>	NRKS	
0-			SILTY SAND FILL, loose, no	nnlactic dr	. & crumbly	10/04			T			
4			brown, 7.5YR 4/3	ripiastio, UI)	a Granibly,	10/24	l	0				
_	SM											
ا						10/24		0				
7												
†			SILTY CLAY, semiplastic, so	ft, dry & cru	mbly,	10/24		0		Plastic trash and cloth end Cap thickness is 4 feet.	ountered at 4 feet bgs	
5-	MSW		brown, 10YR 4/3	•	•				İ	Cap anomicos to 4 look		
-	IVISVV					10/01		_		4.6% methane detected and 75% methan-		
+			A			12/24		0		detected. Stopped rig for	15 minutes.	
1	MSW	Ш	As above but with black soft									
	MSW	Ш	SILTY CLAY, semiplastic, so gray 10YR 3/1	ft, dry & cru	mbly, dark	1000				Dattom of halo at 40 fact to	an Troch in hetter	
10	IVIOVV		gray 101R 3/1			12/24		0		Bottom of hole at 10 feet b boring.	gs. Trash in bottom o	
15 — 20 — 25 —	20-											
30- St	ell H		ronmental nterprises, Inc. The Difference!	Environmental Enterprises, Inc 25 East Main Street Elverson, PA Project # 03225					HOLE NUMI	BER: CB-15		

DD	16 1 1M/	LOG	DIVISION	INICT	ALLATION					QUEET 1 OF 1					
·	JECT:		rt Landfill	1 11431	ALLATION SHEET 1 OF 1 SIZE AND TYPE OF BIT: 2" OD Split Spoon										
	ATION:		uston, TX		DATUM FOR ELEVATION SHOWN:										
DRIL	LING AG	ENCY:	Best Drilling Services			MANUFACTURERS DESIGNATION OR DRILL: CME Truck Mounted Rotary Rig									
HOL	E NUMBI	R:	CB-16			TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED: 0 UNDISTURBED: 0									
	E OF DR		Sonny Tabolta		1	TOTAL NUMBER OF CORE BOXES: 0 ELEVATION GROUND WATER: n/a									
			Vertical		DATE HOLE:										
			BURDEN:6 feet bgs ROCK: n/a			ELEVATION TOP OF HOLE: TOTAL CORE RECOVERY: 0									
		OF HO			SIGNATURE OF										
eet						(in.)	Box or Sampling No.		vel						
Depth in Feet	NSCS	GRAPHIC	DESCRIP	TION		Recovery (in.)	Box or Sa	Box or Si	Water Level	REMARKS					
			SILTY SAND FILL, loose, non dark brown, 10YR 3/3	plastic, dry	& crumbly,	12/24		0							
-	SM	ı				18/24		0		Concrete refusal at 6 feet bgs. Tried 6 other holes					
	5					24/24		0		and all had the same result. can assume waste starts at 6 feet bgs. Cap thickness is 6 feet. Bottom of hole at 6 feet bgs.					
th W9126G-06-R-0013\03225 Belifort TX Landfill\Deliverables\Phase II\Draft\ 5															
ojects\03200 USACE Fort Wo	0														
10-08-2010 N:NP.	Ttel H	J nvi	ronmental nterprises, IncThe Difference!	Stell	Environmenta 25 East Ma Elverso Project #	ain Stre in, PA	eet	, Inc		HOLE NUMBER: CB-16)				

DRILL	ING	LOG	DIVISION	INST	ALLATION					SHEET 1 OF 1				
PROJECT			rt Landfill		SIZE AND TYPE OF BIT: 2" OD Geoprobe									
LOCATIO			uston, TX		DATUM FOR ELE	VATION								
DRILLING	AGEN	ICY:	Best Drilling Services		MANUFACTURE	RS DESI	GNATIO	N OR D	RILL:					
HOLE NU			CB-17		1	TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED: 0 UNDIS								
NAME OF	DRILL	ER:	Sonny Tabolta		TOTAL NUMBER				0					
DIRECTIO	ON OF	HOLE:	Vertical		ELEVATION GRO	UND WA	ATER:		et b					
THICKNE	SS OF	OVER	BURDEN:10 feet bgs		DATE HOLE: ELEVATION TOP	OE HOL	E ·	1.5	IARII	ED: 6/25/10 0910 FINISHED: 6/25/10 0930				
DEPTH D	RILED	INTO F	ROCK: n/a		TOTAL CORE RE									
TOTAL DI	EPTH (OF HOL	E: 10 feet bgs		SIGNATURE OF I									
Depth in Feet	nscs	GRAPHIC	DESCRI		Recovery (in.) Box or Sampling No.					REMARKS				
	SM		SILTY SAND FILL, loose, no dark brown, 10YR 3/3 SILTY CLAY, semiplastic, me brown 10YR 3/3			48/48		0		Trash, plastic and wood encountered at 3 feet bgs. Cap thickness is 3 feet.				
. 1 _1	иsw					24/48		0						
3oring Logs)	лsw		CLAYEY SILT, plastic, soft, v brown, 10YR 4/4	vet, dark yel	et, dark yellowish			0	V	Groundwater at 9 feet bgs. Bottom of hole at 10 feet bgs. Trash in bottom of hole.				
10-12-2010 N:Projects/03200 USACE Fort Worth W9126G-06-R-0013/03225 Bellfort TX Landfill\Deliverables\Phase InDraft\Boring Logs\CB-17.bor 0														
1 52 noisects/03200 USACE Fort Worth 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			·											
10-12-2010 N:NP	ell F		ronmental nterprises, Inc. The Difference!	Stell	Environmental Enterprises, Inc 25 East Main Street Elverson, PA Project # 03225					HOLE NUMBER: CB-17 (SHEET 1 OF 1)				

DRILLING LOG	DIVISION	INSTALLATION	FALLATION									
	t Landfill		ALLATION SHEET 1 OF SIZE AND TYPE OF BIT: 2" OD Split Spoon with HSA									
LOCATION: Ho	uston, TX		DATUM FOR ELEVATION SHOWN:									
DRILLING AGENCY:	Best Drilling Services		MANUFACTURERS DESIGNATION OR DRILL: CME Truck Mounted Rotary Rig									
HOLE NUMBER:	CB-18	•	TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED: 0 UNDISTURBED: 0									
NAME OF DRILLER:	Sonny Tabolta	B .	TOTAL NUMBER OF CORE BOXES: 0									
DIRECTION OF HOLE:	Vertical		ELEVATION GROUND WATER: N/A STARTED: 6/24/10 1415 EINIGHED: 6/24/10 1450									
THICKNESS OF OVERE	SURDEN: 10 feet bgs		DATE HOLE: STARTED: 6/24/10 1415 FINISHED: 6/24/10 1450 ELEVATION TOP OF HOLE:									
DEPTH DRILED INTO R	OCK: n/a		TOTAL CORE RECOVERY: 0									
TOTAL DEPTH OF HOL	E: 10 feet bgs	SIGNATURE O	SIGNATURE OF INSPECTOR:									
Depth in Feet O Depth in Feet O Depth in Feet O Depth in Feet O Depth in Feet O Depth in Feet	DESCRII SILTY SAND FILL, loose, no dark brown, 10YR 3/3 SILTY CLAY, plastic, medium 10YR 3/3	PTION nplastic, dry & crumbly,	24/24 20/24 20/24 24/24 8/24	Box or Sampling No.	0 0 0	Water Level	Trash, glass, plastic and n feet bgs. Cap thickness is	netal encountered at 3 3 feet.				
25												

	DRILL	ING	LOG	DIVISION	INST	TALLATION SHEET 1 OF 1									
	PROJEC			rt Landfill	1 11101	SIZE AND TYPE O	F BIT:	2" OI	O Geo	prob					
	LOCATIO			uston, TX		DATUM FOR ELEV				p . x.a					
	DRILLING			Best Drilling Services		MANUFACTURER:	S DESIG	NATION	LOR DR	RILL:	Geoprobe Tractor Mounted				
	HOLE N	JMBER:		CB-19		TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED: 0 UNDISTUR									
	NAME O	F DRILL	ER:	Sonny Tabolta		TOTAL NUMBER O									
	DIRECTI	ON OF	HOLE:	Vertical		ELEVATION GROUDATE HOLE:	JND WA	IER:	8 fee		s. D: 6/25/10 0945 FINISHED: 6/25/10 1015				
	THICKNE	SS OF	OVER	BURDEN:10 feet bgs		ELEVATION TOP (OF HOLE		1 317	AKIE	5 0/23/10 0945 FINISHED 0/23/10 1015				
	DEPTH [RILED	INTO F	ROCK: n/a		TOTAL CORE REC									
	TOTAL D	EPTH (F HOL	E: 10 feet bgs		SIGNATURE OF IN	SPECTO	DR:							
	Depth in Feet	nscs	GRAPHIC	DESCRI	IPTION		Recovery (in.)	Box or Sampling No.	PID	Water Level	REMARKS				
	0-	SM		SILTY SAND FILL, loose, no dark brown, 10YR 3/3	onplastic, dry	/ & crumbly,			0						
	_	CI		SILTY CLAY, nonplastic, stif 10YR 5/2	ff, dry, grayis	sh brown,	48/48		0						
	5 -	CL							0						
19.bor	-	ML		CLAYEY SILT, plastic, medi 10YR 5/1	um stiff, moi	st, gray,	48/48		0		Trash and plastic encountered at 7 feet bgs. Cap				
-ogs\CB-	_	MSW							ż	v	thickness is 7 feet. Groundwater at 8 feet bgs.				
ft\Boring	10-						12/24		0		Bottom of hole at 10 feet bgs. Trash in bottom of hole.				
rt TX Landfil∖Deliverables∖Phase I∖\Dr	- - 15 — -														
26G-06-R-0013\03225 Bellfo	- 20 - -														
10-12-2010 N:Projects\03200 USACE Fort Worth W9126G-06-R-0013\03225 Bellfort TX LandfilNDeliverables\Phase INDraft\Boring Logs\CB-19.bor	25 - - - - - 30														
10-12-2010 N:\Pri	S	ell E		ronmental nterprises, Inc. The Difference!	Stell I	ll Environmental Enterprises, Inc 25 East Main Street Elverson, PA Project # 03225					HOLE NUMBER: CB-19 (SHEET 1 OF 1)				

Boring Log Legend

ML - Clayey Silt

CL - Silty Clay

 $SM-Silty\ Sand$

MSW – Municipal Solid Waste

SC- Sandy Clay

7.5YR 4/3 – Descriptive color value from Munsell color chart.

APPENDIX C MONITORING WELL INSTALLATION LOGS AND WELL DEVELOPMENT RECORDS

WELL CONSTRUCTION DIAGRAM

Page ___ of ___

Project #: 03225.02	Project Name: Ballfur	Street Landl:	N Boring W	ell#: 🐴 🐼 - (06			
Geologist: Tim Swarely	Driller/Company: \$\int_{\text{0}}\$	onny / Bes	2 Delling					
Drilling Equip.: CME Model 75 T	ruck Mounted	Date Start: 🕻	(, 123 (10					
Surface Elev.: Top of Casing		Total Depth: 25 11 bg, Well Depth: 25 11 bg						
Depth (bgs) Note: Use top of casing (TOC) for all depth me A. Protective casing, top elevation			1. Cap and 2. Protect		⊠Yes □No □Yes ☑No			
	ft. MSL		3. Protect		3.75 in.			
C. Land surface elevation	ft. MSL ¬		a. Len	gth:	<u>5.0</u> ft.			
D. Surface seal, bottom _ 5 ft.TOC or _	ft. MSL		4. Drainag	,	□Yes ☑No			
14 Hood I is it of it			5. Surface a. Cap	seal:	Gravel blanket Bentonite			
16. USCS classification of soil near screen: GP □ GM □ GC □ GW □ SW □	I SP 🗆				Concrete 🖾			
SM SC ML MH CL					Other 🗆			
— Bedrock □			o. Anni	ılar space seal:	Bentonite Cement			
— 17. Sieve analysis attached? □Yes	⊠No				Other 🗆			
18. Drilling method used: Rotar	y 🗆 📗 📱			veen well casing	Bentonite 🗆			
Hollw Stem Auge	l n		and protectiv	e casing:	Cement 🖾			
Othe					Other 🛘			
_	ir 🖸 📗 📳		7. Annular space		nular Bentonite 🗆			
Drilling Mud □ Non	ie 🖭 📗			mud weight Benton mud weight B				
20. Drilling additives used? □Yes	⊠No			ite Bentonite				
Describe			e. yd.³ f. How installed:	volume added fo				
21. Source of water (attach analysis):			i. now installed:		Tremie 🔲			
				-	Gravity 🗷			
			8. Centralizers		□Yes ☑No			
			 9. Secondary Fig. a. Volume add 	ter edyd.³	□Yes ⊠No			
			-10. Bentonite sea		j			
E. Secondary filter, top MA ft. TOC or	ft. MSL —			i. a. E ∄ § in. □ ½ in. E	Bentonite pellets			
F. Bentonite seal, top 14 ft. TOC or	ft. MSL —			3 g m. 🗀 2 m.				
G. Secondary filter, top N/A ft. TOC or	ft. MSL		-11. Secondary Fil a. Volume adde	ter dyd.³	□Yes ■No Bags/Size			
H. Primary filter, top 16 ft. TOC or	ft. MSL —		12. Filter pack m	aterial: Manufacture mesh size:	er, product name &			
I. Screen joint, top 18 ft. TOC or	ft. MSL			1: ch Sand 2019 0.175 yd.371				
J. Well bottom 28 ft. TOC or ft.	MSL —		13. Well casing:		VC schedule 40 🗷			
K. Filter pack, bottom 28 ft. TOC or	ft. MSL			Flush threaded P	VC schedule 80			
L. Borehole, bottom Z8 ft. TOC or	ft. MSL — \\		- 14. Screen materi	al: <u></u>				
M. Borehole, diameter § .25 in.			a. Screen ty	*	Factory cut ☑ Continuous slot □			
N. O.D. well casing 2.25 in.					Other D Manufacturing Equi			
O. I.D. well casing 1.0 in.	\\		c. Slot size: d. Slotted le	ength:	0. <u>016</u> ininin.			
P. 24 hr. water level after completion 11.45 in	i.TOC orin. MSL		13. Dackilli mate	erial (below filter pa	ck): None 🗵Other 🗖			

WELL CONSTRUCTION DIAGRAM	
	_

WE	LL CONSTRUC	TION DIAGRA	AM	Page <u>\</u> of <u>\</u>
Project #: 0322S, 02 Proje	ect Name: ມິະແຊະ	Street Landell	Boring Well	#: MW-02R
Geologist: Tim Survey				
Drilling Equip .: CME Touch Mountal Ma			1	te Completed: (21(0
Surface Elev.; Top of Casing Elev Depth Note: Use top of casing (TOC) for all dorth management.	v.:	Total Depth: 55 k	l bgs	Well Depth: 55 4 bg,
(han)	ements.		- 1. Cap and lo	ck? Yes 🗆 No
A. Protective casing, top elevation B. Well casing, top elevation			 Protective 3. Protective 	
C. Land surface elevation				diameter: 3.75 in.
D. Surface seal, bottom ft.TOC or	ft. MSL		– 4. Drainage p	
16 170 00 1			5. Surface se	oraver changer E
16. USCS classification of soil near screen: GP □ GM □ GC □ GW □ SW □ SP			а. Сар	Bentonite Concrete
SM SC ML MH CLE CH	1 1			Other 🗆
— Bedrock □			b. Annular	t .
17. Sieve analysis attached? □Yes ☑N	lo			Cement ☑Other □
18. Drilling method used: Rotary □			Material betwee	n well casing
Hollw Stem Auger ☑			and protective ca	Bentonite Cement 🖸
Other 🗆			***	Other 🗖
19. Drilling fluid used: Water ☐ Air ☐ Drilling Mud ☐ None ☑		7. A	nnular space se	al: a. Granular Bentonite d weight Bentonite-sand slurry
20. Drilling additives used? □Yes ■No		c	Lbs/gal mu	d weight Bentonite-slurry
Describe	°			Bentonite-cement grout
21. Source of water (attach analysis):			ந்துyd.³ ow installed:	volume added for any of the above Tremie
				Tremie pumped
	-1 #	8.0	entralizers	Gravity 🗷
		9. S	econdary Filter	□Yes ☑No □Yes ☑No
		a.`	Volume added _	yd.3 Bags/Size
E. Secondary filter, top N/A ft. TOC or fi	ì. MSL —	H HH //	entonite seal:	a. Bentonite pellets 🗵
F. Bentonite seal, top 45 ft. TOC or ft.	\ 111	b.	$\square \frac{1}{4}$ in. $\square \frac{3}{8}$	in. □ ½ in. Bentonite pellets ☑ Other □
G. Secondary filter, topft. TOC orf	it. MSL	■ // _{-11 S}	econdary Filter	Dyes Fly
H. Primary filter, top 47 ft. TOC or ft. N	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		olume added	
I. Screen joint, top 4a ft. TOC or ft. MS	\ \ \	1 124//		ial: Manufacturer, product name & mesh size:
·	\\\	aU b.Vo	lume added O.	115 yd. 37/5016, Bags/Size
J. Well bottom 5% ft. TOC or ft. MSL	\ \ \			lush threaded PVC schedule 40 🗵
K. Filter pack, bottom 5 ft. TOC or ft.	MSL —			lush threaded PVC schedule 80
L. Borehole, bottom 50 ft. TOC or ft. M	MSL —	14. So	creen material:	Other 🗆
M. Borehole, diameter \$.25 in.	\\\		a. Screen type:	Factory cut ☐ Continuous slot ☐
N. O.D. well casing <u>2つち</u> in.		-	b. Manufacture	Other Other Garle Court Manifestory Early
O. I.D. well casing 2.0 in.			c. Slot size: d. Slotted lengt	0. 0.0 in.
P. 24 hr. water level after completion 14, 32 in TOC c	orin. MSL			(below filter pack): None Other

WELL CONSTRUCTION DIAGRAM

Page ____ of ___

	Project #: 0 32 25 . 02	Project Name: Bell for	r Street	. Landalite	Boring Well	#: JUNW - 0	g passes
	Geologist: Tim Swavely	Driller/Company:	Sonny	/ Best	Duilling		
	Drilling Equip.: CME Model 75 Tow	de Mounted	Date Star	rt: (,1221	10 Da	te Completed:	Glzzlio
	Surface Elev.: Top of Casi		Total Dep	oth: 25	St. bys	Well Depth:	25 H. Vg1
•	C. Land surface elevation D. Surface seal, bottom 5.0 ft.TOC or 16. USCS classification of soil near screen GP GM GC GW SW SM SC MML MH CL E Bedrock 1 17. Sieve analysis attached? Yes 18. Drilling method used: Rot Hollw Stem Au Ot 19. Drilling fluid used: Water 1	ft. MSL ft. MSL ft. MSL ft. MSL SP CH CH CMNo ary		6. Man 7. A b c d e f. Hc 8. C 9. Sc	- 1. Cap and lot 2. Protective a. Inside a. Lengtl - 4. Drainage - 5. Surface se a. Cap b. Annula Material between Innular space s Lbs/gal mu Lbs/gal mu x Bentonite (54 yd. 3) w installed:	posts? casing: diameter: n: port(s): al: r space seal: en well casing casing: di weight Benton di weight E	BYes □No □Yes □No □Yes □No 3.75 in. □S.0 ft. □Yes □No Gravel blanket □ Bentonite □ Concrete □ Other □ Bentonite □ Cement □ Cement □ Cement □ Other □ Bentonite □ Tremie □ □ Tremie □ □ Gravity □ □Yes □No
	E. Secondary filter, top ft. TOC or F. Bentonite seal, top ft. TOC or	ft. MSL		//-10. Be b. c.	entonite seal:	a. $\frac{3}{3}$ in. $\square \frac{1}{2}$ in.	Bags/Size Bentonite pellets Bentonite pellets Other
i	G. Secondary filter, top N/A ft. TOC or_			/ / a. V		yd.3	□Yes ☑No Bags/Size
	H. Primary filter, top 17.0 ft. TOC or I. Screen joint, top 14.0 ft. TOC or	\ \ \		/ a. <u>U</u>	Inimia J	mesh size:	rer, product name & Z0/40 J3016, Bags/Size
	J. Well bottom 24.0 ft. TOC or K. Filter pack, bottom 24.0 ft. TOC or L. Borehole, bottom 24.0 ft. TOC or	ft. MSL			_	Flush threaded F	PVC schedule 40 ☑ PVC schedule 80 ☐ Other ☐
	M. Borehole, diameter 8.75 in. N. O.D. well casing 2.25 in. O. I.D. well casing 2.0 in. P. 24 hr. water level after completion 10.51	_in.TOC orin. MSL			c. Slot size:d. Slotted len	irer <u>Gwls (arit</u>	Factory cut Continuous slot Continuous slot Cother

Project #: 03225.01	Project Name: Bellious	Street Landern	Boring Well #:	MW-DUR
	1	Sonny / Best		
Drilling Equip.: CME Model 75 Tond	h Mounted	Date Start: (, \\\	ito Date	Completed: 6121110
Surface Elev.: Top of Casi		Total Depth: 35	4. 60, N	Vell Depth: 35 🚨 😘
Depth Note: Use top of casing (TOC) for all depth r			1. Cap and lock	
A. Protective casing, top elevation		\frown	2. Protective po 3. Protective car	
	ft. MSL	T-18	a. Inside dia	
C. Land surface elevation	ft. MSL —		a. Length:	<u> </u>
D. Surface seal, bottom 6 ft.TOC or	ft. MSL	71	4. Drainage por	` '
	The following the second		5. Surface seal:	· ·
16. USCS classification of soil near screen:			a. Cap	Bentonite 🗖
GP□ GM□ GC□ GW□ SWI	□ SP □			Concrete ☑ Other □
SM SC ML MH CL	CH 🗆		b. Annular sp	***************************************
Bedrock □			o. Amidiai sp	Cement
17. Sieve analysis attached? □Yes	No			Other \square
18. Drilling method used: Rot	ary 🗆	Ⅲ Ⅲ _6	. Material between v	well casing
_	·		and protective casi	
Hollw Stem Au	ger 🖼 her 🗖			Cement 🗵
		▦▦◞◞		Other 🗆
1 1	Air 🗆 📗	HH HH	Annular space seal	
Drilling Mud D	one 🖬	mm mm		weight Bentonite-sand slurry weight Bentonite-slurry
20. Drilling additives used? □Yes	⊠No			Bentonite-cement grout
Describe				olume added for any of the above
21. Source of water (attach analysis):			How installed:	Tremie □
				Tremie pumped
	***************************************			Gravity 🛚
		 	. Centralizers	□Yes ⑤ No
	-	Ⅲ Ⅲ	Secondary Filter	☐Yes ☑No yd.³Bags/Size
			a. Volume added	yd.3 Bags/Size
To Company the Authority of Mac	0 .)	H / -10	Bentonite seal:	a. Bentonite pellets 🗖
E. Secondary filter, top M/A ft. TOC or			b. □ ¼ in. 🖾 ¾ in	n. $\square \frac{1}{2}$ in. Bentonite pellets \square
F. Bentonite seal, top 25 ft. TOC or	ft. MSL —		c	Other 🗆
C. Sasandami filton tara Alfa A. TOCan	A MOI		. Secondary Filter	□Yes ⊠No
G. Secondary filter, top MA ft. TOC or_	IL MSL	₩ // a	. Volume ådded	
H. Primary filter, top 27 ft. TOC or	ft. MSL —	12	. Filter pack materia	al: Manufacturer, product name &
I. Screen joint, top えぬ ft. TOC or	ft. MSL —	Ø / a.	Onimin 1-12	mesh size:
J / I	_ \ \ \			yd.3 8150 16, Bags/Size
J. Well bottom <u>" ft. TOC or</u>	ft. MSL — \			
-	\ \\\	13	-	ush threaded PVC schedule 40
K. Filter pack, bottom 3% ft. TOC or	ft. MSL \		Flu	ush threaded PVC schedule 80
L. Borehole, bottom_3%_ft. TOC or	ft. MSL —		. Screen material:	Other 🗆
M. Borehole, diameter \$25 in.			a. Screen type:	Factory cut
Wi. Botenote, diameterIII.				Continuous slot
N. O.D. well casing 7.25 in.	\ \ \		h Manufacture	Other 🗆
	\\		c. Slot size:	r Guit Court Monitoring Early O. (110 in.
O. I.D. well casing 2.() in.	/ /		d. Slotted length	
		1:	5. Backfill material ((below filter pack): None 🗵
P. 24 hr. water level after completion 12.74	in.TOC orin. MSL \	1/////		Other 🗆

1.7

WELL DEVELOPMENT RECORD

WELL DESIGNATION: M	N-07	DATE(S) OF INSTALLAT	6/22/10		
SITE GEOLOGIST: Time	othy Survey	DATE(S) OF DEVELOPM	MENT:	6/25/10	
STATIC WATER LEVELS: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	9.6 Feet	DATE	6/25/10	
•	24 HRS. AFTER DEVEL.	***************************************	DATE		
DEPTH TO SEDIMENT: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	15.4 Feet	DATE	6/25/10	
(FROM FOR OLOMO)	24 HRS. AFTER DEVEL.		DATE	4	
DEPTH TO WELL BOTTOM: (FROM TOP OF CASING)	25 Feet				
QUANTITY OF MUD/WATER	(gallons):				
LOST	DURING DRILLING				
REMOV	VED PRIOR TO WELL INSE	RTION			
LOST	J/THICK FLUID DISPLACEM	ENT			
ADDED) d/FILTER PACK REPLACE	MENT		TOTAL MEN NOTICE CONTROL OF THE PROPERTY OF TH	
(a) water column (ft.)	5,8	(b) well diameter (in.)	Q.	25012	
(c) screen length (ft.)	10	(d) borehole diameter (in.	0	25	
(e) annulus space/length (ft)	6		-		
QUANTITY OF FLUID STAND	ING IN WELL	5,33		gallons	
QUANTITY OF FLUID IN ANN	IULUS			gallons	
3 TOTAL QTY. (& equivalent vol	umes) <u>15.99 qal</u>	TOTAL DEVEL.			
TOTAL QTY. (5 times losses)		VOLUME	15,99	gallons	
TYPE AND SIZE OF PUMP:					
TYPE AND SIZE OF BAILER:	-				
DESCRIPTION OF SURGE TO	ECHNIQUE, IF ANY:				
TYPICAL PUMPING RATE	1.5 gal/min GA	AL/HR EST. RECHARGE F	RATE	90 gal/hr	
TOTAL QUANTITY OF WATE	R REMOVED 82,5 a	jal TIME REQ	UIRED	55 min	
SIGNATURE OF SITE GEOLG					

Project: [Sell Sort LandFill

Well: MW-07

Geol vgist:

Page 1 of 1

.73 x 6= 4.38 .1632 x 5:8= 0.95 5:33 x 5= 15.99 gal

<u> </u>	Т]	1	T	_	T	Γ	T	T	Τ	1	Γ	Γ	1		T	Τ	T
Comments		on sometown: represent property of the contract of the contrac	en erryptere (rossesse) in the behavior and the contract of th			FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF		Andrea de la companya de la companya de la companya de la companya de la companya de la companya de la companya				And the second s						and the second s
Appearance	Brown	Clarely	11))	eloudy	Cleudy	Semi-clear	Pale Yellow										
Redox Potential (Eh) (mV)	14-	-20	ક	-27	12	3.1	21	7										
Turbidity (NTU)	94842°	1.36m	4.48188	127	5.65	24.3	18	157										
Temp (°C)	31.80	24.69	43.30	23,10	22,46	92.69	22.6 Y	22.54										
DO (mg/L)	1.79	2,09	1. 28	1.75	0,94	121		91.1					:					
Cond (µS/cm)	1,39	06.)	2.31	2,35	2.38	D, 39	2.44	Shie										
Нd	7.54	7.30	6.94	7.00	6,95	7.64	6.87	18.9										
Depth to Water (ft TOC)	りる	r. e	12.5	13.0	15.4	16.2	16.4	191										
Quantity Removed (gallons)	(,5	7.5	1-51	20°, 5	37.5	52.5	529	5.58										
Flow Rate (gal/min)	1.5	1.5	1.5	1,5	<u> </u>	1.5	١, ج	511										
Pump On/Off	g	ه ک	ريه	8	30	<i>و</i> ک	(o	CO							A Company of the Comp			
Time	1610	1615	१६२७	1625	1635	5491	1655	7051										
Date	6/25/10 1610															TRANSPORTED CONTRACTOR		

WELL DEVELOPMENT RECORD

WELL DESIGNATION:	W-4R	DATE(S) OF INSTALLA	6/21/10		
SITE GEOLOGIST: Tim	Sincerchy	DATE(S) OF DEVELOP	MENT:	6/25/10	
STATIC WATER LEVELS: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	12.26 Feet	DATE	6/25/10	
(internal of or oriento)	24 HRS. AFTER DEVEL.		DATE	and the same of th	Necessary
DEPTH TO SEDIMENT: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	26.54' Seet	DATE	6/25/10	
	24 HRS. AFTER DEVEL.		DATE		_
DEPTH TO WELL BOTTOM: (FROM TOP OF CASING)	38.8 39 Seet				
QUANTITY OF MUD/WATER	(gallons):				
LOST	DURING DRILLING				
REMOV	/ED PRIOR TO WELL INSER	RTION			
LOST	I/THICK FLUID DISPLACEMI	ENT			
ADDED	d/FILTER PACK REPLACE	MENT			
(a) water column (ft.)	14.28	(b) well diameter (in.)	Q.	.25 oD	en en en en en en en en en en en en en e
(c) screen length (ft.)	10	(d) borehole diameter (in		.25	
(e) annulus space/length (ft)	6	(2) 20.0/10.0	·/		
		<i>r</i> ¬ i			-
QUANTITY OF FLUID STAND		6,71		gallons	
QUANTITY OF FLUID IN ANN		TOTAL		gallons	
TOTAL QTY. (§ equivalent vol	umes) <u>20.13</u>	DEVEL. VOLUME			
TOTAL QTY. (5 times losses)		REQ'D	20.1	3 gallons	
TYPE AND SIZE OF PUMP:	and distributions				
TYPE AND SIZE OF BAILER:					
DESCRIPTION OF SURGE TO	ECHNIQUE, IF ANY:			·	
TYPICAL PUMPING RATE	l. 25 GA	L/HR EST. RECHARGE I	RATE	75 gal/Lr	
TOTAL QUANTITY OF WATE	R REMOVED 27.50	TIME REC	UIRED	75 gal/hr 22 min	
SIGNATURE OF SITE GEOLG	1019T	Ting day	<u></u>		

,73 x 6 = 4.38

Project: Ballfort LandFill

Well: MW-4R

Geol wist:

6.71 × 3= 20.13 gal

Page 1 of (

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		general statement and statement and property of the statement of the state	AND THE REAL PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE P	and the state of t			WHENCE TO THE THE THE THE THE THE THE THE THE THE		des distributions de la conferencia de la conferencia de la conferencia de la conferencia de la conferencia de		en establishen der der der der der der der der der der			TO THE TAXABLE BUT HE TO THE TAXABLE BUT THE BUT THE B				des statistismis superior services and services from services statistisms of the conference of the con
Cloudy	SECURIOR SEC		Semi-clear		Clear			a de la companya de l	To provide the state of the sta	Aft of high sixtures of consensations were consensations and consensations of the consensatio		Well-Week-esprendentialisticated and Anthropological Anthropol					A CANALA	
81	ጉ ተ	-97	29-	52-	-16					PROPERTY COMMENCED AND ADDRESS OF THE PROPERTY								
		1,29	341	651	126													
25.12	23.82	22,70	22.77	33,00	22.93													
 | | | |
 | | | | | |
 | Tenanta Tenanta Perinta de Carta | 7, 64 | O.70 | 0.78 | 1.07 | 3,05 | 2.14 | |
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 | мония изментациям от приментациям под п |
3.34	3.34	3.34	3,34	3,33	3,33				enter plane de l'approprie de l'appr									AND THE PROPERTY OF THE PROPER
7,63	7.4(7.18	7.22	7.30	2.27													AND THE PROPERTY OF THE PROPER
12.26	28.88	38.8k	58,88	38,60	19.88								-	- NA CANADA CANA	menunchum dasa (dakadakkan kengalan dakadakkan kengalan dakadakkan dakadakkan dakadakkan dakadakkan dakadakkan			Andrew Communication of the Co
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383)	1805	0181	1815	0281	1872													
6/25/10		***************************************						An destinative browning and the second		And the state of t	The second secon	de detailment incommencement						
	1.25 0 12.36 7.63 3.34 7.04 25.12 - 18	on 1.25 6.35 38.88 7.41 3.34 0.70 33.82 - 144	on 1.25 6.35 38.88 7.41 3.34 7.64 35.13 — 18 On 1.25 6.35 38.88 7.41 3.34 0.70 32.82 — -44 on 1.35 13.5 38.88 7.18 3.34 0.78 33.70 624 -97	on 1.25 6.35 38.88 7.41 3.34 7.64 35.13 — 18 on 1.25 6.35 38.88 7.41 3.34 0.70 32.82 — -44 on 1.35 13.5 38.88 7.18 3.34 0.78 33.70 624 -97 on 1.25 18.75 38.83 7.22 3.34 1.07 33.77 391 -62	on 1.25 0 13.36 7.63 5.34 7.64 35.13 — 18 on 1.25 6.35 38.88 7.41 3.34 0.70 33.82 — -44 on 1.35 13.5 38.88 7.18 3.34 0.78 33.70 624 -97 on 1.25 18.75 38.83 7.22 3.34 1.07 33.77 341 -62 on 1.25 35 35 3.05 33.05 33.05 154 -25	on 1.25 0 13.36 7.63 5.34 7.64 35.13 — 18 on 1.25 6.35 38.88 7.41 3.34 0.70 33.82 — 44 on 1.35 13.5 38.88 7.18 3.34 0.78 33.70 624 -97 on 1.25 18.75 38.83 7.22 3.34 1.07 33.77 341 62 on 1.25 35.60 3.53 3.05 33.05 33.05 136 -16 on 1.35 37.50 38.61 7.27 3.53 3.14 32.93 136 -16	on 1.25 0 13.36 7.63 5.34 7.64 35.13 - 18 on 1.25 6.45 38.88 7.41 3.34 0.0 32.82 0.7 32.82 0.7 0.7 32.82 0.7 <th>on 1.25 (6.35 38.88 7.41 3.34 7.04 35.13 — 18 on 1.25 (6.35 38.88 7.41 3.34 0.70 33.82 — -44 on 1.35 13.5 38.83 7.18 3.34 0.78 33.70 624 -97 on 1.25 18.75 38.83 7.22 3.34 0.78 33.00 159 -62 on 1.35 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 38.50 38.61 7.37 3.33 3.05 33.00 159 -16</th> <th>on 1.25 6.35 38.88 7.41 3.34 7.64 35.13 — 18 on 1.35 1a.5 a8.88 7.41 3.34 0.78 aa.70 624 -97 on 1.35 1a.5 a8.83 7.22 3.34 0.78 aa.70 624 -97 on 1.25 35 a8.60 7.30 3.33 a.05 a3.00 159 -16 on 1.35 a7.50 a8.61 7.27 3.33 a.05 a3.00 130 -16</th> <th>on 1.25 6.35 38.88 7.41 3.34 7.04 35.13 — 18 on 1.25 6.35 38.88 7.41 3.34 0.70 33.82 — 44 on 1.35 18.5 38.83 7.12 3.34 0.78 33.70 624 -97 on 1.25 18.75 38.83 7.22 3.34 1.07 33.10 1.55 on 1.35 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 136 -16</th> <th>on 1.25 6.35 38.88 7.41 3.34 7.04 35.13 — 18 on 1.35 13.5 38.88 7.41 3.34 0.70 33.82 — -44 on 1.35 13.5 38.83 7.12 3.34 0.78 33.70 6.24 -97 on 1.25 18.75 38.83 7.22 3.34 1.07 33.77 391 -62 on 1.25 35 38.60 7.50 3.33 3.05 33.06 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.06 159 -16</th> <th>on 1.25 6,35 38.88 7.41 3.34 7.64 3513 — 18 on 1.35 135 38.88 7.41 3.34 0.70 33.82 — 144 on 1.35 135 38.83 7.18 3.34 0.78 33.70 624 -97 on 1.25 18.75 38.83 7.22 3.34 1.07 33.11 -62 on 1.35 38.60 7.30 3.33 3.05 33.00 159 -16 on 1.35 3750 38.61 7.27 3.33 3.05 33.00 136 -16</th> <th>on 1.25 6.35 38.88 7.41 3.34 7.04 3513 — 18 on 1.35 18.5 38.88 7.41 3.34 0.70 32.82 — -44 on 1.35 18.75 38.83 7.12 3.34 0.79 33.70 624 -97 on 1.25 18.75 38.85 7.22 3.34 0.79 33.70 624 -16 on 1.35 37.50 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -16 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -16</th> <th>on 1.25 6.35 38.88 7.41 3.84 7.04 3513 — 18 on 1.35 13.5 38.88 7.41 3.84 0.70 33.82 — -44 on 1.35 18.75 38.83 7.22 3.34 0.79 33.70 624 -97 on 1.25 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -16</th> <th> 1.25 6,35 38.88 7.41 3.34 7.04 35.13 18 1.35 13.5 38.88 7.41 3.34 0.70 33.82 144 1.35 13.5 38.83 7.12 3.34 0.78 33.70 0.24 -97 1.35 18.75 38.83 7.22 3.34 0.78 33.70 0.24 -97 1.35 18.75 38.85 7.22 3.35 3.05 33.00 1.59 1.35 38.60 7.35 3.35 3.05 33.00 1.59 1.35 38.61 7.27 3.33 3.14 33.93 136 -16 1.35 3.55 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 3.35 3.14 3.15 136 -16 1.35 3.35 3.14 3.15 136 -16 1.35 3.35 3.14 3.15 136 -16 1.35 3.35 3.15 3.15 136 -16 1.35 3.35 3.15</th> <th>on 1.25 6,35 38.88 7.41 3.44 7.64 3513 — 18 on 1.35 13.5 38.88 7.41 3.44 0.78 33.70 624 -97 on 1.35 13.5 38.83 7.22 3.34 0.78 33.70 524 -97 on 1.25 25 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -16</th> <th>on 1.25 6,35 38.88 7.41 3.34 7.64 3513 — 18 on 1.35 18.5 38.88 7.41 3.34 0.70 32.82 — -44 on 1.35 18.75 38.83 7.22 3.34 0.78 32.77 391 -62 on 1.25 35 38.60 7.30 3.33 3.00 159 -16 on 1.35 37.50 38.61 7.27 3.33 3.14 32.93 136 -16</th> <th>on 1.25 6,35 38.88 7.41 3.41 7.04 3513 — 18 on 1.35 18.5 38.88 7.41 3.41 0.78 34.82 — -44 on 1.35 18.75 38.83 7.22 3.34 0.78 34.7 341 -62 on 1.25 35 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.04 32.93 136 -16</th>	on 1.25 (6.35 38.88 7.41 3.34 7.04 35.13 — 18 on 1.25 (6.35 38.88 7.41 3.34 0.70 33.82 — -44 on 1.35 13.5 38.83 7.18 3.34 0.78 33.70 624 -97 on 1.25 18.75 38.83 7.22 3.34 0.78 33.00 159 -62 on 1.35 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 38.50 38.61 7.37 3.33 3.05 33.00 159 -16	on 1.25 6.35 38.88 7.41 3.34 7.64 35.13 — 18 on 1.35 1a.5 a8.88 7.41 3.34 0.78 aa.70 624 -97 on 1.35 1a.5 a8.83 7.22 3.34 0.78 aa.70 624 -97 on 1.25 35 a8.60 7.30 3.33 a.05 a3.00 159 -16 on 1.35 a7.50 a8.61 7.27 3.33 a.05 a3.00 130 -16	on 1.25 6.35 38.88 7.41 3.34 7.04 35.13 — 18 on 1.25 6.35 38.88 7.41 3.34 0.70 33.82 — 44 on 1.35 18.5 38.83 7.12 3.34 0.78 33.70 624 -97 on 1.25 18.75 38.83 7.22 3.34 1.07 33.10 1.55 on 1.35 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 136 -16	on 1.25 6.35 38.88 7.41 3.34 7.04 35.13 — 18 on 1.35 13.5 38.88 7.41 3.34 0.70 33.82 — -44 on 1.35 13.5 38.83 7.12 3.34 0.78 33.70 6.24 -97 on 1.25 18.75 38.83 7.22 3.34 1.07 33.77 391 -62 on 1.25 35 38.60 7.50 3.33 3.05 33.06 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.06 159 -16	on 1.25 6,35 38.88 7.41 3.34 7.64 3513 — 18 on 1.35 135 38.88 7.41 3.34 0.70 33.82 — 144 on 1.35 135 38.83 7.18 3.34 0.78 33.70 624 -97 on 1.25 18.75 38.83 7.22 3.34 1.07 33.11 -62 on 1.35 38.60 7.30 3.33 3.05 33.00 159 -16 on 1.35 3750 38.61 7.27 3.33 3.05 33.00 136 -16	on 1.25 6.35 38.88 7.41 3.34 7.04 3513 — 18 on 1.35 18.5 38.88 7.41 3.34 0.70 32.82 — -44 on 1.35 18.75 38.83 7.12 3.34 0.79 33.70 624 -97 on 1.25 18.75 38.85 7.22 3.34 0.79 33.70 624 -16 on 1.35 37.50 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -16 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -16	on 1.25 6.35 38.88 7.41 3.84 7.04 3513 — 18 on 1.35 13.5 38.88 7.41 3.84 0.70 33.82 — -44 on 1.35 18.75 38.83 7.22 3.34 0.79 33.70 624 -97 on 1.25 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -16	1.25 6,35 38.88 7.41 3.34 7.04 35.13 18 1.35 13.5 38.88 7.41 3.34 0.70 33.82 144 1.35 13.5 38.83 7.12 3.34 0.78 33.70 0.24 -97 1.35 18.75 38.83 7.22 3.34 0.78 33.70 0.24 -97 1.35 18.75 38.85 7.22 3.35 3.05 33.00 1.59 1.35 38.60 7.35 3.35 3.05 33.00 1.59 1.35 38.61 7.27 3.33 3.14 33.93 136 -16 1.35 3.55 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 33.93 136 -16 1.35 3.35 3.14 3.35 3.14 3.15 136 -16 1.35 3.35 3.14 3.15 136 -16 1.35 3.35 3.14 3.15 136 -16 1.35 3.35 3.15 3.15 136 -16 1.35 3.35 3.15	on 1.25 6,35 38.88 7.41 3.44 7.64 3513 — 18 on 1.35 13.5 38.88 7.41 3.44 0.78 33.70 624 -97 on 1.35 13.5 38.83 7.22 3.34 0.78 33.70 524 -97 on 1.25 25 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -16	on 1.25 6,35 38.88 7.41 3.34 7.64 3513 — 18 on 1.35 18.5 38.88 7.41 3.34 0.70 32.82 — -44 on 1.35 18.75 38.83 7.22 3.34 0.78 32.77 391 -62 on 1.25 35 38.60 7.30 3.33 3.00 159 -16 on 1.35 37.50 38.61 7.27 3.33 3.14 32.93 136 -16	on 1.25 6,35 38.88 7.41 3.41 7.04 3513 — 18 on 1.35 18.5 38.88 7.41 3.41 0.78 34.82 — -44 on 1.35 18.75 38.83 7.22 3.34 0.78 34.7 341 -62 on 1.25 35 38.60 7.30 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.05 33.00 159 -25 on 1.35 37.50 38.61 7.27 3.33 3.04 32.93 136 -16

WELL DEVELOPMENT RECORD

WELL DESIGNATION: 100	-28	DATE(S) OF INSTALLA	TION:	6/21/10
SITE GEOLOGIST:	thy Twavely	DATE(S) OF DEVELOP	MENT:	6/26/16
STATIC WATER LEVELS: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	15.1 Sect	DATE	6/26/10
(FROM FOL OF OAGING)	24 HRS. AFTER DEVEL.	MARKET MARKET MARKET MARKET MARKET MARKET MARKET MARKET MARKET MARKET MARKET MARKET MARKET MARKET MARKET MARKET	DATE	
DEPTH TO SEDIMENT: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	59.6 Sect	DATE	6/26/10
(i rtom solver onome)	24 HRS. AFTER DEVEL.		DATE	
DEPTH TO WELL BOTTOM: (FROM TOP OF CASING)	59 Fect	_		
QUANTITY OF MUD/WATER	(gallons):			
LOST	DURING DRILLING	William Control of the Control of th	***************************************	
REMO	/ED PRIOR TO WELL INSER	RTION		
LOST d	/THICK FLUID DISPLACEME	ENT		
ADDED	d/FILTER PACK REPLACE	MENT		
(a) water column (ft.)	44.5	(b) well diameter (in.)	-2	00 2,25 00
(c) screen length (ft.)	10	(d) borehole diameter (ir	r) 8	.25
(e) annulus space/length (ft)	6	and the second section to a second section to the section to the se		
QUANTITY OF FLUID STAND	ING IN WELL	11.64		gallons
				94110110
QUANTITY OF FLUID IN ANN	ULUS			gallons
3 TOTAL QTY. & equivalent volu	3	TOTAL DEVEL		-
3		TOTAL DEVEL. VOLUME REQ'D	34.9 <u>3</u>	-
3 TOTAL QTY. & equivalent volu		DEVEL. VOLUME	34.93	gallons
3 TOTAL QTY. & equivalent volu TOTAL QTY. (5 times losses)		DEVEL. VOLUME	34.93	gallons
TOTAL QTY. (5 times losses) TYPE AND SIZE OF PUMP:	umes) 34.93 gal	DEVEL. VOLUME	34.93	gallons
TOTAL QTY. (5 times losses) TYPE AND SIZE OF PUMP: TYPE AND SIZE OF BAILER:	ECHNIQUE, IF ANY:	DEVEL. VOLUME		gallons
TOTAL QTY. (5 times losses) TYPE AND SIZE OF PUMP: TYPE AND SIZE OF BAILER: DESCRIPTION OF SURGE TE	ECHNIQUE, IF ANY: 34.93 gal GAI	DEVEL. VOLUME REQ'D L/HR EST. RECHARGE	RATE	gallons

Project: Bellfart Landfill

Well: MW-02R

Geologist.

73 x 6 = 4,38

11.64 x 3= |34.93 gal 1632 x 44.5= 7,26

Comments	The second secon						Torned pomp of the			Turke punp. OFF		- Andreas May-pay-pay-pay-pay-pay-pay-pay-pay-pay-p							
Appearance	Breun			gemi-		Cloudy	Cloudy Th	cloudy	Claudy	Claudy		Semi Ckar	1.1	11	Pellowis L	Sau- Sur	Clear	-	
Redox Potential (Eh) (mV)				-8(89 -	99-	34-	09-	ξ C €	26	ا	29	9	ы	62	7.7	2.1		
Turbidity (NTU)	352		23.9	کہک	155	desperations	*copilient;	**cyclittery		*Negotateosch	-Phasesir't.	त्राद	141	103	11.	50	14		
Temp (°C)	23.59		83.69	34.01	23,32	23,07	32.9(33,66	15'26	33' 4G	22.91	23.22	14.86	49,64	93,13	43,20	23,22		
DO (mg/L)	36	277,141 (17)		0,96	1.38	6.97	0,45	2.48	3,86	3,30	2,34	2,77	2,21	2.3	12.44	2,21	0,31		
Cond (µS/cm)	4.07			4.42	4,39	4.67	4,07	2015	4.53	S h'' h	4.50	14.41	94.4	4.39	7.76	1,41	432		
Ħď	7.45	7	1.34	7.85	7,65	2,48	7,32	7.62	7.69	1,914	6912	7.57	7.5%	2,60	557	2,52	9,57		
Depth to Water (ft TOC)	35.7		70,2	35.70	49,53	53,10	55,50	53,69	31195	6223	51.15	54.70	25.45	55.90	56,22	57.8	57.21		
Quantity Removed (gallons)		Land of the land o	0	Ø O	2,5	7.5	13	1.3	3	23	23	2018	30.5	33	35.5	300	40.5		
Flow Rate (gal/min)	The second designation of the second		4.5	رة ما	0.5	0,5	G,5	6.5	6.5	3,0	ر ا ا	0.5	5'0	ム'O	5'0	0,5	5'0		
Pump On/Off	20	4.0	/a	ر ن	ć	67	Ś	な	S S	S S	くり	00	50	ر ن	Ş	VO	00		
Time	Z	1	133	44611° 0820	0925	6835	3545	0,000	0416	3920	0935	3460	0950	2560	000	1065	toic		
Date	6/25/10	et 36/10/17/16	8(125/10-1779)	SACE:	Spelic Spelic	6/11/1c	ंक्षिण	्रीय्यी	0//2/19	ত সন/ত		T Printers del		*					

KNB

WELL DEVELOPMENT RECORD

WELL DESIGNATION: _M(J-06	DATE(S) OF INSTALLA	TION:	6/23/10
SITE GEOLOGIST: Tim	Inevely	DATE(S) OF DEVELOP	MENT:	6/26/10
STATIC WATER LEVELS:	BEFORE DEVELOPMENT	23.65 Feet	DATE	6/26/16
(FROM TOP OF CASING)	24 HRS. AFTER DEVEL.	-	DATE	Providence of the Control of the Con
DEPTH TO SEDIMENT: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	28.10 Feet	DATE	6/26/10
(FROM TOP OF CASING)	24 HRS. AFTER DEVEL.		DATE	
DEPTH TO WELL BOTTOM: (FROM TOP OF CASING)	29 Seet	_		
QUANTITY OF MUD/WATER	(gallons):			
LOST	DURING DRILLING		A4	
REMOV	/ED PRIOR TO WELL INSER	RTION		
LOST d	/THICK FLUID DISPLACEME	ENT		
ADDED	d/FILTER PACK REPLACE	MENT	g#.	
(a) water column (ft.)	4.45	(b) well diameter (in.)	2,	25 :
(c) screen length (ft.)	10	(d) borehole diameter (ir	ı.) <u>8</u> .	25
(e) annulus space/length (ft)	G			
QUANTITY OF FLUID STAND	ING IN WELL	57,106		gallons
QUANTITY OF FLUID IN ANNI	ULUS			gallons
3 TOTAL QTY. (万 equivalent volu	ımes) <u>15,32</u>	TOTAL DEVEL		
TOTAL QTY. (5 times losses)		VOLUME REQ'D	15.32	gallons
TYPE AND SIZE OF PUMP:				
TYPE AND SIZE OF BAILER:				
DESCRIPTION OF SURGE TE	CHNIQUE, IF ANY:			
TYPICAL PUMPING RATE	O,5 GAI	L/HR EST. RECHARGE	RATE	30 3.5 gal/hr
TOTAL QUANTITY OF WATER	R REMOVED 225 g	<u> </u>	QUIRED	45 min
	•			

Project: Belifort LandFill

Well: NW-OGC

Geol igist:

.73 × 6= 4.38 .1634 × 4.45=0, 24 72624 4 6 9 al × 3 = 15.25 gal 5.106

Page 1 of 1

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	Appearance	Claudy	STREET SEAL OF THE PROPERTY OF		Claudy			THE CASE OF THE CA	semi alear	Clear	o gyfydd galan da ddiadaid aeth ddiadaid a gyfyr y gyfyr y gyfyr y gyfyr y gyfyr y gyll y gyl					A POPULATION AND PROPERTY AND P	Treasure de la constitución de l	Control and Autophysical Annies of Control and Control
Redox	Potential (Eh) (mV)	-60	-52	44	-20	6	9	61	24	91								
	(UTN)	Conditionary) to	VOJAGISKĆ*	l	970	ماع	981	11.7	7.	9								ARMA BEREICHE BEN LANGUE FRANK EIN VON ANNEN GEREICHE FOR VON ANNEN GEREICHE FRANK EIN VON ANNEN GEREIC
	ရှိ (၁)	25,71	18'48	DH.13	23,82	33,65	23,82	23,12	23.24	23.18								TANA MINING INVESTMENT MAINTENAMEN APPRAISE CONTRACTOR
6	(mg/L)	3,17	2.78	2,51	2,23	2.11	2,62	1.87	2,13	2.43								DOCUMENTARY AND DOCUMENTARY AN
7	(m2/cm)	4.67	4.13	4,39	4,13	4,27	55'5	4.59	4.53	64.4								TO SOUTH A PROPERTY OF THE PRO
	Hd	167	7,72	992	1,5,1	17.27	1-11-2	642	4.53	84'2								
Depth to	(ft Toc)	33,65	24.10	24.67	18778	00'EE	26,70	26.96	27,32	1920								
Quantity	(gallons)	0	2,5	5	2'2	10	15	5'21	30,0	24,5								dennist diploministration of the state of th
Flow	(gal/min)	5'0	5'0	0,5	0,5	0.5	2'0	5.0	7.0	٥, ۶								
E	On/Off	C _O	0	00	01	00	~o	ر ₀	C 30	00					Commission of the Commission o			
	Time	1045	1650	10.55	1100	1105	1115	1130	1135	1130								
	Dafe	0/98/10 104S																

APPENDIX D LOW FLOW SAMPLING AND DATA SHEETS

LOW FLOW SAMPLING DATA SHEETS

Sheet	1	of	1
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Site: Date: 7/20/2010 Weather: Cloudy and Hot						С	lient /Site:	Field		USAC	E/Bellfort	Landfill				
	Weat	her:		С	loudy and H	lot		P	ersonnel: J	lob*	Tim	Swavely	and Greg	Kochano	wicz	•
Monitor	ing W	ell #:.		MW-07			Depth: Well		27.4	_ft	Screen	ed/Open li	nterval:	10		ft
We	II Perr	nit #:		NA			neter:		2	inches						
PID'FID Re	FID Readings ppm):								ımp İntake D	-		22.40		ft below TO		
Backgroun	ckground: Beneath Outer Cap: Beneath							De	epth to Wate	r Before Pu	ımp installat	ion:	7.8	34	It be	low TOC
Inner Cap:											_					1
IIIVIE		San					Specific Conductiv	zi4vz	Dissol	rod.	Podov	Potential				
	at c	Sampling	рН (рН	units)	Temperat	ture <°C)	(us/cm)	vity		n <mg m<="" td=""><td>(mV)</td><td>rotentiai</td><td>Turbid</td><td>ity (NTU)</td><td>Pumping</td><td>Depth to</td></mg>	(mV)	rotentiai	Turbid	ity (NTU)	Pumping	Depth to
	Q. Reading Change Reading Change Re													Rate	Water (ft	
1110	448 6.68 23.75					Reading	Change	Reading	Change		Change	Reading	Change	(gal/min)	below TOC)	
-				0.44		0.05	2.54	0.40	0.05	0.05	-63	_	305.00	050.70	0.50	9.20
							2.42 2.49	0.12	0.00	0.05	-54 -50	9	52.30 14.00	252.70 38.30	0.50 0.50	9.20 9.20
							0.07	0.00	0.00	-30 -49	1	5.30	8.70	0.50	9.20	
1503			6.61		0.01 25.15 0.21 2.50 0.04 25.00 0.15 2.48			0.01 0.02	0.00	0.00	-49 -48	1	5.40	0.10	0.50	9.20
1513			6.62	0.04	25.65	0.15	2.49	0.02	0.00	0.00	-46 -47	1	5.70	0.10	0.50	9.20
1313			0.02	0.01	25.05	0.03	2.43	0.01	0.00	0.00	-41		3.70	0.30	0.50	9.20
Commer	nts: S	Sam	ples MW-()7, MW-	01-QC, M	S-1W-7,	and MSD-	1W-7 co	llected at	1530	-		_		_	

•INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: + 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mV for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEETS

Sheet	1	of	1
		•	•

S	ite: D	e: Date: 7/20/2010 eather: Hot and Humid, Cloudy						C	lient /Site:	Field						
	Weat	her:		Hot a	nd Humid, C	loudy		Pe	ersonnel: J	ob*	Tim	Swavely	and Greg	Kochano	wicz	<u>-</u>
				MW-02R					59.8					10		ft
Monitor	ing W I Perr			NA			Depth: Well neter:		2	.ft inches	Screen	ed/Open I	nterval:	-		. 11
vve	ren	IIIL #.		IVA		0	ietei.	Pı	ımp Intake D			54.80	ft below T		oc .	
PID'FID Re				-		0			·	•	ump Installat	ion:	13.	17	ft be	low TOC
Backgroun Inner Cap:	d: Be	neath	Outer Cap:	Beneath .		0			•		•	,				
TIME		ပ္လ					Specific									
	at c	Sampling	Hq) Hq	units)	Temperat	ure <°C)	Conductiv	vity	Dissolv Oxyger	/ed n <mg m<="" td=""><td>Redox (mV)</td><td>Potential</td><td>Turbid</td><td>ity (NTU)</td><td>Pumping Rate</td><td>Depth to</td></mg>	Redox (mV)	Potential	Turbid	ity (NTU)	Pumping Rate	Depth to
						Reading	Change	Reading	Change	Reading	Change	Reading	Change	(gal/min)	Water (ft below TOC)	
1318					24.96	- Training	4.800		0.54		-117	- Triming	149.00		0.25	15.75
1323			7.14	0.01	24.08	0.88	4.890	0.090	0.22	0.32	-128	11	38.30	110.70	0.25	17.50
1328			7.19	0.05	24.39	0.31	4.870	0.020	0.29	0.07	-107	21	17.30	32.00	0.25	18.80
1332			7.18	0.01	25.11	0.72	4.800	0.070	0.21	80.0	-109	2	13.40	3.90	0.25	18.90
1338			7.13	0.05	25.15	0.04	4.770	0.030	0.24	0.03	-117	8	10.90	2.50	0.25	19.00
1343			7.13	0.00	25.14	0.01	4.780	0.010	0.21	0.03	-120	3	8.00	2.90	0.25	19.20
1348			7.17	0.04	25.09	0.05	4.710	0.070	0.21	0.00	-123	3	9.60	1.60	0.25	19.50
	<u> </u>			ليليا												
Commer	its: S	sam	ple MW-02	∠R colle	cted at 14	00										

•INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: + 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mV for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEETS

Sheet	1	of	1

	ite: C				7/20/2010				lient /Site:			USAC	E/Bellfort I	_andfill		
	Weat	her:		Hot a	nd Humid, C	loudy		P	ersonnel: J	ob*	Tim	Swavely	and Greg	Kochano	wicz	<u>-</u>
Monitor We	ing W			MW-04R NA			Depth: Well	3	8.25	.ft inches	Screen	ed/Open lı	nterval:	10		ft
						0		Pı	ımp Intake D			33		ft below TO	С	
			n): Outer Cap:	Beneath		0		De	epth to Water	r Before P	ump Installat	tion:	10.	82	ft be	low TOC
Inner Cap: TIME	Spectrum of the state of the st					Specific Conducti (us/cm)	vity	Dissolv Oxygei	/ed n <mg m<="" td=""><td>Redox (mV)</td><td>Potential</td><td colspan="2">Turbidity (NTU)</td><td>Pumping Rate</td><td>Depth to Water (ft</td></mg>	Redox (mV)	Potential	Turbidity (NTU)		Pumping Rate	Depth to Water (ft	
		ρſ		Change		Change	Reading	Change	Reading	Change		Change	Reading	Change	(gal/min)	below TOC)
911							3.70		1.75		-77		178.00		0.25	12.2
916			6.93		24.25		3.70		0.80		-75		105.00		0.25	12.18
921			6.85		24.31		3.68		0.48		-69		63.30		0.25	12.1
926			6.85		24.49		3.68		0.47		-69		59.90		0.25	12.05
931			6.86		24.42		3.67		0.48		-68		56.80		0.25	12.05
Commer	nts: \$	Sam	ple MW-0	4R colle	cted at 09	45.										

•INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: + 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mV for Redox Potential; and ± 10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING DATA SHEETS

Sito: Dato:		7/20/2010	Client /Site: Field	LICACE/Polifor
Sheet 1	of	1		

S	ite: D	ate:					Client /Site: Field Personnel: Job*		Field							
,	Weat	her:		Hot a	nd Humid, C	loudy		Pe	ersonnel: J	ob*	Tim	Swavely	and Greg	Kochano	wicz	
		•								-						
Monitor	ina W	ell #·		MW-06		Well	Depth: Well	2	28.5	ft	Screen	ed/Open li	nterval:	10		ft
	I Pern			NA			neter:		2	inches		ош орон н				
						0		Pι	ımp Intake D	epth:		N/A		ft below TO	OC .	
PID'FID Rea			n): · Outer Cap:	Reneath		0		De	epth to Water	Before Pu	ımp Installat	ion:	11.3	35	ft be	elow TOC
Inner Cap:	u. Do.	outi.	outor oup.	Domoutii		0						•				
TIME	at c	Sampling	pH (pH	units)	Temperat	Specific Conductive (us/cm) Reading Change Reading			Dissolv Oxyger	red n <mg m<="" td=""><td>Redox (mV)</td><td>Potential</td><td>Turbidi</td><td>ty (NTU)</td><td>Pumping Rate</td><td>Depth to Water (ft</td></mg>	Redox (mV)	Potential	Turbidi	ty (NTU)	Pumping Rate	Depth to Water (ft
	ff 3 Q.	ing	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	(gal/min)	below TOC)
						·				Ĭ				ŭ	,,,	
	omments: Car could not get to well to use pump; Hand baile W-06 collected at 1125.			ed 3 wel	l volumes	(13 gal)	and then	sample	d. No par	ameters	taken. Sa	ample				

APPENDIX E ANALYTICAL LAB REPORTS (CD)

APPENDIX F SOIL AND GROUNDWATER DATA VALIDATION REPORTS

Federal 8(a) PennDOT DBE PA DGS WBE

DATA VALIDATION REPORT PHASE II ENVIRONMENTAL SITE ASSESSMENT BELLFORT STREET LANDFILL HOUSTON, TEXAS TEST AMERICA JOB NUMBER: 280-5524-1

This validation report presents the findings of a quality assurance review of the analytical data generated for ground water samples collected at the Bellfort Street Landfill site. The samples were collected 20 July 2010 and submitted to TestAmerica Laboratories, Inc. (TA) of Denver, Colorado.

The sample specific analysis performed included volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals (total and dissolved). The analyses were performed in accordance with the protocols presented in *Test Methods for Evaluating Solid Waste, USEPA SW-846, Third Edition, November 1986 and its updates.* Specific method references are as follows:

<u>Analysis</u> <u>Method References</u>

VOCs USEPA SW-846 Method 8260B SVOCs USEPA SW-846 Method 8270C

Metals USEPA SW-846 Methods 6010C and 7470A

The samples included in the referenced TA job number are as follows:

MW-2R MW-4R

MW-6 MW-7

MW-01-OC

(Blind field duplicate of sample MW-7)

Data Validation Summary

The findings offered in this report are based on a comprehensive review of the data for all samples. The data have been validated and qualified according to the protocols and quality control (QC) requirements of the analytical methods, the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA 540/R-99/008, October 1999, the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, USEPA-540-R-10-011, January 2010, and the reviewer's professional judgment.

The review was based on an evaluation of the following criteria, reported according to the CLP-equivalent deliverables format: chain of custody documentation; sample preservation; holding times; laboratory method blanks; trip blanks; instrument calibration blanks; bromofluorobenzene (BFB) and decafluorotriphenylphosphine (DFTPP) mass tuning results; initial and continuing calibration data; low-level check standards; Inductively Coupled Plasma (ICP) interference check sample results; internal standard performance; laboratory control sample (LCS) results; matrix spike/matrix spike duplicate (MS/MSD) recoveries and reproducibility; post-digestion spike recoveries; serial dilution results; field duplicate precision; and the quantitation of sample results.

Field duplicate precision was evaluated by comparison of the analytical results for the duplicate samples and calculation of the relative percent difference (RPD) for the analytical results. The field duplicate precision RPD criterion was 20% for VOCs and 25% for SVOCs and metals. A QC limit equal to 2X the Limit of Quantitation (LOQ) was used for field duplicate results at concentrations less than 5X the LOQ.

Data validation qualifiers, consistent with the referenced validation guidance, were added to the electronic data deliverable (EDD) provided with the laboratory data report. The "U" qualifier was applied to all results for which the compound/analyte was analyzed for but not detected above the Limit of Quantitation (LOQ) or when a positive result has been negated due to blank contamination. The "J" qualifier was applied to all positive results below the LOQ and to all reported values or "non-detect" LOQs that were quantitatively estimated because of QC criteria exceedances. The "J-" qualifier was applied to all metals results that were considered biased low quantitative estimates. Those "non-detect" results that were rejected due to lack of a recovery with the MS/MSD analysis were marked as "R" in the EDD.

Data Validation Results

General Comments

All of the referenced samples were received by the laboratory in acceptable condition. Two trip blank samples were received at the laboratory but were not listed on the chain of custody. Both of these trip blank samples were analyzed for VOCs.

All VOC and metals samples were prepared and analyzed within the method required holding time. There were two sets of results reported for the SVOC analysis as the method blank associated with the original preparation batch had a surrogate recovery that was below the QC limit. Comparable results were obtained with both analyses, and all results for SVOCs were reported from the initial sample extraction which was performed within the prescribed holding times. Low concentrations of target compounds/analytes were detected in associated blanks, and affected sample results were negated. All surrogate recoveries for investigative samples were within QC limits. Some VOCs exhibited low relative response factors with initial and continuing calibrations, and results for these VOCs were qualified. Recoveries for all calibration verification standards and post-digestion spikes were acceptable. Results for all serial dilution analyses samples were within QC limits. Results for two metals (total) and one SVOC were qualified on the basis of field duplicate precision. Low recoveries were obtained for one metal with the MS/MSD analysis and certain SVOCs in the LCS, and the positive results or "non-detect" LOQs for these compounds/analyte were qualified. Additionally, the MS/MSD analysis for the SVOC fraction yielded no recovery for one compound and poor precision for another compound. Results for the compound yielding no MS/MSD recovery were rejected in the unspiked sample, while all positive results for the SVOC exhibiting poor MS/MSD precision were qualified as estimated.

Qualifications

All positive results reported at concentrations below the LOQ were qualified "J" to indicate that they are quantitative estimates.

The positive results for the VOCs and SVOCs summarized in the following table are considered qualitatively invalid since these compounds were also detected in associated trip blanks or method blanks. For common laboratory contaminants, like acetone, methylene chloride, and the phthalate esters, results are negated and qualified "U" if they are less than 10X the associated blank concentration. Sample concentrations greater than the LOQ and less than the blank qualification level are reported as less than the sample concentration in the EDD. Sample concentrations less than both the LOQ and the qualification level are reported as less than the LOQ in the EDD.

VOCs and SVOCs Qualified for Blank Contamination	Associated Samples	
Acetone	MW-6 and MW-7	
Methylene Chloride	All Investigative Samples	
Bis-(2-ethylhexyl) phthalate	All Investigative Samples	

The positive results for total or dissolved metals summarized in the following table are considered qualitatively invalid since they were also detected in associated instrument or method blanks at similar concentrations. The associated sample results have been negated and qualified "U" and are reported as less than the LOQ in the EDD.

Metals Qualified for Blank Contamination	Associated Samples
Cadmium (Total)	MW-01-QC, MW-2R, MW-4R, and MW-7
Chromium (Total)	MW-2R, MW-4R, and MW-6
Antimony (Dissolved)	MW-01-QC
Nickel (Dissolved)	MW-6

The initial and/or continuing calibration relative response factors (RRFs) for the VOCs acetone, 2-butanone, and methyl acetate were below the lower QC limit of 0.05. These low RRFs are an indication of reduced method sensitivity for these compounds, and the non-detect LOQs for acetone, 2-butanone, and methyl acetate in all investigative samples have been qualified "UJ" in the EDD to indicate that they are estimated.

The Laboratory Control Sample associated with the SVOC analysis yielded recoveries for acenaphthane, acenaphthylene, hexachlorobutadiene, hexachloroethane, 2-chloronaphthalene, 4-chlorophenyl phenyl ether, dibenzofuran, benzo(a)pyrene, 2-methylnaphthalene, naphthalene, and hexachlorocyclopentadiene that were below the lower QC limits. These low recoveries are an indication of a low bias with the measurement of these compounds in the associated samples, and the "non-detect" LOQs for these compounds in all samples were qualified "UJ" in the EDD to indicate that they are quantitative estimates that may be biased low. The possibility of elevated LOQs should be noted when assessing the "non-detect" results for the referenced SVOCs in all samples.

The MS/MSD analysis of sample MW-7 for SVOCs yielded no recovery for 3,3'-dichlorobenzidine. This extremely poor performance for this compound with the SVOC analysis of sample MW-7 is an

indication of a severe matrix interference, and the "non-detect" results for 3,3'-dichlorobenzidine in sample MW-7 and its field duplicate, MW-01-QC, have been rejected.

The MS/MSD analysis of sample MW-7 for SVOCs yielded inconsistent performance for caprolactam, which was detected at a concentration of 210 ug/L in the unspiked sample but was not detected in the MS/MSD sample (caprolactam was not a spiked compound with the SVOC MS/MSD analysis). These inconsistent results are an indication of a non-homogeneous sample and/or inconsistent method performance, and the positive results for caprolactam in all samples have been marked with "J" qualifiers in the EDD to indicate that they are quantitative estimates.

The MS/MSD analysis of sample MW-7 for total metals yielded recoveries for antimony that were below the lower QC limit. These low recoveries are an indication of a matrix interference with the analysis for total antimony in the associated samples, and the "non-detect" LOQs for this analyte in all samples were qualified "UJ" in the EDD to indicate that they are quantitative estimates that may be biased low. The possibility of elevated LOQs should be noted when assessing the "non-detect" results for total antimony in all samples.

Sample MW-7 and its blind field duplicate sample, MW-01-QC, were submitted to the laboratory to evaluate sampling and analytical precision for the project. All results reported for this field duplicate pair were within the project QC limits, with the exception of di-n-butyl phthalate, total aluminum, and total iron. The poor field duplicate precision for these compounds/analytes is likely attributable to matrix interference and their results should be considered estimated. This has been indicated by marking the positive results for di-n-butyl phthalate in the field duplicate pair with "J" qualifiers in the EDD and the positive results for total aluminum and total iron in all samples with "J" qualifiers in the EDD.

Conclusion

This report presents the findings of the validation of the specified data, which is associated with the analysis of samples collected at Bellfort Street Landfill site and reported in the referenced TA job number. The data validation included a review of the data deliverables described in the Data Validation Summary portion of this report. The following data validation qualifiers were applied as appropriate:

U – The compound/analyte was analyzed for but not detected above the LOQ, or the positive result has been negated due to blank contamination.

UJ – The compound was not detected and the reported LOQ should be considered a biased low quantitative estimate.

J – The reported value was quantitatively estimated because of a QC exceedance or because the concentration was below the LOQ.

J- – The reported value should be considered a biased low quantitative estimate.

R – The "non-detect" result for this compound was rejected.

The laboratory analyses were performed acceptably for the referenced sample results, with the exception of the rejected results for 3,3-dichlorobenzidine described in the report. In summary, all results that were not rejected are valid and useable with qualifications as presented in the validation report.

In the event that you have questions or require additional information, please feel free to contact me at 610-329-1307.

Regards

Joseph M. Loeper, Ph.D.

Senior Quality Assurance Chemist

13 September 2010

Dated

Federal 8(a) PennDOT DBE PA DGS WBE

DATA VALIDATION REPORT PHASE II ENVIRONMENTAL SITE ASSESSMENT BELLFORT STREET LANDFILL HOUSTON, TEXAS TEST AMERICA JOB NUMBER: 280-4896-1

This validation report presents the findings of a quality assurance review of the analytical data generated for soil samples collected at the Bellfort Street Landfill site. The samples were collected 26 June 2010 and submitted to TestAmercia Laboratories, Inc. (TA) of Denver, Colorado. All samples were analyzed for RCRA metals in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, November 1986 and its Updates, SW-846 Methods 6010C and 7471B".

The samples included in the referenced TA job number are as follows:

SS-01	SS-02
SS-03	SS-04
SS-05	SS-06
SS-07	SS-08
SS-09	SS-10
SS-062610-QC (Blind field duplicate of sample	e SS-04)

Data Validation Summary

The findings offered in this report are based on a comprehensive review of the data for all samples. The data have been validated and qualified according to the protocols and quality control (QC) requirements of the analytical method, the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, USEPA-540-R-10-011, January 2010*, and the reviewer's professional judgment.

The review was based on an evaluation of the following criteria, reported according to the CLP-equivalent deliverables format: chain of custody documentation; sample preservation; holding times; laboratory method blanks; instrument calibration blanks; initial and continuing calibration data; low-level check standards; Inductively Coupled Plasma (ICP) interference check sample results; laboratory control sample (LCS) results; matrix spike/matrix spike duplicate recoveries and reproducibility; post-digestion spike recoveries; serial dilution results; field duplicate precision; and the quantitation of sample results.

Field duplicate precision was evaluated by comparison of the analytical results for the duplicate samples and calculation of the relative percent difference (RPD) for the analytical results. The field duplicate precision RPD criterion for all analyses was 40%. A QC limit equal to 3X the Reporting Limit (RL) was used for field duplicate results at concentrations less than 5X the RL.

Data validation qualifiers, consistent with the referenced validation guidance, were added to the electronic data deliverable (EDD) provided with the laboratory data report. The "U" qualifier was applied to all results in which the compound was analyzed for, but not detected above the Limit of Quantitation (LOQ) or when a positive result has been negated due to blank contamination. The "J" qualifier was applied to all positive results below the LOQ and to all reported values or "non-detect" LOQs that were quantitatively estimated because of QC criteria exceedances. The "J-" qualifier was applied to all results that were considered biased low quantitative estimates.

Data Validation Results

General Comments

Minor labeling discrepancies were identified by the laboratory. These discrepancies were resolved via e-mail communication with sampling personnel. There was insufficient ice in the sample cooler to maintain the samples at the prescribed temperature of $\leq 6^{\circ}$ C, and the positive results or "non-detect" LOQs for mercury have been qualified.

All sample analyses were performed within the method required holding time. Low concentrations of target analytes were detected in the method blank and calibration blanks, and associated results for one analyte were negated. Recoveries for all calibration verification standards, LCSs, and post-digestion spikes were acceptable. Results for all serial dilution analyses samples were within QC limits. A low recovery was obtained for one analyte with the MS/MSD analysis, and the positive results for this analyte were qualified.

Sample SS-04 and its blind field duplicate, SS-062610-QC, were submitted to the laboratory to evaluate sampling and analytical precision for the project. Acceptable field duplicate precision was observed for all results reported for this field duplicate pair.

Qualifications

All samples were received at the laboratory at a temperature of 17°C. Mercury in soil samples that are not maintained under appropriate temperature conditions may be subject to losses, and the positive results or "non-detect" LOQs for mercury in all samples have been qualified "J-" or "UJ", respectively, to indicate that they are estimated and potentially biased low. The possibility of elevated LOQs should be noted when assessing the "non-detect" results for mercury in these samples.

All positive results reported at concentrations below the LOQ were qualified "J" to indicate that they are quantitative estimates.

The positive results reported for silver in samples SS-01, SS-02, SS-03, SS-07, and SS-08 are considered qualitatively invalid since similar concentrations of this analyte were detected in associated calibration blanks. The referenced sample results for silver have been negated and qualified "U" and are reported as less than the LOQ in the EDD.

The MS/MSD analysis of sample SS-02 yielded recoveries for lead that were below the lower QC limit of 75%. These low recoveries are an indication of a matrix interference with the analysis for lead in the associated samples, and the positive results for this analyte in all samples were qualified "J" to

indicate that they are quantitative estimates. A bias was not assigned to these results since the post-digestion spike recoveries for this analyte were within acceptance limits.

Conclusion

This report presents the findings of the validation of the specified data, which is associated with the analysis of samples collected at Bellfort Street Landfill site and reported in the referenced TA job number. The data validation included a review of the data deliverables described in the Data Validation Summary portion of this report. The following data validation qualifiers were applied as appropriate:

U – The target metal was analyzed for but not detected above the LOQ, or the positive result has been negated due to blank contamination.

UJ – The compound was not detected and the LOQL should be considered a biased low quantitative estimate.

- J The reported value was quantitatively estimated because of a QC exceedance or because the concentration was below the LOQ.
- J- The reported value should be considered a biased low quantitative estimate.

In summary, the laboratory analyses were performed acceptably for the referenced sample results, and are valid and useable with qualifications as described in the validation report.

In the event that you have questions or require additional information, please feel free to contact me at 610-329-1307.

Regards

Joseph M. Loeper, Ph.D.

Senior Quality Assurance Chemist

25 August 2010

Dated